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## GUN COTTON AND ITS PREPARATIONS.

BY CHARLES H. MITCHELL.

From an Inaugural Essay by the Author.

A number of experiments were tried, with a view of ascertaining the relative proportions of cotton and acids, together with the proper time for maceration necessary to produce a cotton which should combine the largest yield with the highest explosive power and solubility. The following formula was at length adopted:

Raw Cotton.....	2 parts.
Carbonate Potassa.....	1 "
Distilled Water.....	100 "

Boil for several hours, adding water to keep up the measure; then wash until free from any alkali, and dry. Then take of:

Purified Cotton.....	7 oz. av.
Nitrous Acid,* s. g. 1.42.....	4 pts.
Sulphuric Acid, " 1.84.....	4 "

Mix the acids in a stone jar capable of holding 2 gals., and when cooled to about 80° Fahr., immerse the cotton in small portions at a time; cover the jar and allow to stand 4 days in a moderately cool place (temp., 50° to 70° Fahr.). Then wash the cotton in small portions, in hot water, to remove the principal part of the acid; pack in a conical glass percolator, and pour on distilled water until the washings are not affected by sol. chloride barium.; drain and dry. Yield, 11 oz. av.

This cotton is perfectly white, of a harsh, gritty fibre, very explo-

\* Nitric, saturated with nitrous acid.—EDITOR AMER. JOUR. PHARM.

sive, leaving scarcely any ash, soluble in ether, ether fortior, acetic ether, glacial acetic acid, and in mixture of alcohol and ether, varying from 1 part ether to 3 parts alcohol to pure ether itself. If a cotton superior to this is desired, it may be obtained by treating this cotton with an additional proportion of the mixed acids, washing and drying as before. The cotton gains about one per ct. in weight, becomes perfectly soluble, and is so free from any ash as to scarcely scorch a sheet of white paper it may be burnt on. Both this and the previous gun cotton may be ignited on gunpowder without exploding it. The advantages claimed for this cotton over that of the U. S. P. are that it is perfectly soluble, very explosive, cheap, its manufacture is much more easy, requiring but little time and attention, and turning out a superior product with large yield and less cost.

The subject of collodion next claims our attention, it being the most important pharmaceutical preparation of gun cotton. The applicability of gun cotton in ethereal solution to the dressing of wounds, inflamed surfaces, &c., was first made known by Dr. Horace Maynard, of Boston. Its valuable properties soon commanded attention, and at once supplied a want long felt in the medical profession. No better formula for collodion can be found than that of the U. S. P. Using the cotton prepared as before mentioned, it left nothing to be desired.

Collodion can also be made the vehicle for other medicines. Those remedies which are used externally, of course, can only be administered in this manner. Having made a number of experiments on this subject, I present the following formulæ, several of which I think are new:

#### STYPTICS.

##### *Styptic Collodion.*

R. Tannin.....	3ij.
Stronger Alcohol.....	f 3iv.
“ Ether.....	f 3xii.
Soluble Cotton.....	3j 3ij.
Canada Balsam.....	3j.

Introduce the cotton into a suitable bottle, pour on it 2 fluidounces of alcohol, shake well; then add 10 fluidounces of the ether, and agitate frequently until dissolved. Dissolve the tannic acid in a mixture of the remainder of the alcohol and ether, mix with the first liquid, add the balsam, allow to stand until clear; then pour off.

##### *Collodion with Sesquichloride of Iron.*

R. Sesquichloride of Iron.....	3j grs. iv.
Stronger Alcohol.....	f 3iv.
“ Ether.....	f 3xij.
Soluble Cotton.....	3j grs. iv.

Into a suitable bottle introduce the cotton, pour on 2 fluidounces of the alcohol, and shake well; then add the ether, and agitate frequently until dissolved. Dissolve the sesquichloride of iron in the balance of the alcohol; mix with the prepared collodion.

# ANODYNES.

## Collodion with Aconite.

R. Pulv. Aconite Root.....	3ij.
Ether.....	f 3vj.
Soluble Cotton.....	3j grs. iv.
Stronger Alcohol.....	q. s.

Mix the ether with 2 fluidounces of alcohol, moisten the aconite with 1 fluidounce of this, pack in a percolator and percolate with the balance, pouring on q. s. alcohol to recover 8 fluidounces, in which dissolve the cotton.

## Collodion with Belladonna.

R. Powdered Belladonna Root.....	3ij.
Ether.....	f 3vj.
Alcohol.....	q. s.
Gun Cotton.....	3j grs. iv.

Mix the ether with 2 fluidounces of alcohol, moisten the belladonna with 1 fluidounce of this, pack in a percolator and percolate with the balance, pouring on q. s. alcohol to recover 8 fluidounces, in which dissolve the cotton.

# ANTISEPTICS AND DISINFECTANTS.

## Collodion with Carbolic Acid.

R. Carbolic Acid.....	3j.
Ether.....	f 3vj.
Stronger Alcohol.....	f 3ij.
Gun Cotton.....	3j grs. iv.

Dissolve the gun cotton in the ether and alcohol mixed, and then add the carbolic acid.

## Collodion with Sulphocarbonate of Zinc.

R. Sulphocarbonate of Zinc.....	3j.
Ether.....	f 3vj.
Stronger Alcohol.....	f 3ij.
Gun Cotton.....	3j grs. iv.

Introduce the cotton into a suitable bottle, add 1 fluidounce alcohol, shake well; add the ether, and agitate frequently until dissolved. Dissolve the zinc salt in the balance of the alcohol, and mix with the prepared collodion.

## Collodion with Thymol.

R. Thymol.....	3j.
Ether.....	f 3vj.
Stronger Alcohol.....	f 3ij.
Gun Cotton.....	3j grs. iv.

Dissolve the cotton in a mixture of ether with part of the alcohol, dissolve the thymol in the balance of the alcohol, and mix.

## STIMULANTS IN CUTANEOUS DISEASES.

*Collodion with Iodide of Mercury.*

R. Mercuric Iodide.....	3j.
Potassium Iodide.....	3ss.
Alcohol.....	f 3iv.
Ether.....	f 3iv.
Gun Cotton.....	3j grs. iv.

Triturate the iodides together in a mortar, add the alcohol boiling, and rub until they are completely dissolved. Then add the gun cotton, lastly the ether, and agitate frequently until the cotton is all dissolved.

## STIMULANTS AND RUBEFACIENTS.

*Collodion with Arnica.*

R. Pulv. Arnica.....	3iv.
Ether.....	f 3xij.
Stronger Alcohol.....	q. s.
Gun Cotton.....	3ij grs. viij.

Mix the ether with 4 fluidounces alcohol. Moisten the arnica with q. s. of this, pack in a percolator and pour on the balance, following with alcohol until 16 fluidounces of tincture have been recovered; to this add the cotton, and agitate frequently until dissolved.

*Collodion with Capsicum.*

R. Grd. Capsicum.....	3iv.
Ether.....	f 3xij.
Stronger Alcohol.....	q. s.
Gun Cotton.....	100 grs.

Proceed as in collodion with arnica, recovering 16 fluidounces of tincture, in which dissolve the gun cotton.

*Collodion with Mezereon.*

R. Grd. Mezereon.....	3iv.
Ether.....	f 3xij.
Alcohol.....	q. s.
Gun Cotton.....	128 grs.

Mix the ether with 4 fluidounces of strong alcohol, and in this allow the mezereon to macerate one week. Drain, pack tightly in a conical percolator, pour on the separated liquid, and follow with enough alcohol to recover 16 fluidounces of tincture, in which dissolve the cotton.

*Collodion with Savin.*

R. Powd. Savin Leaves.....	3iv.
Ether.....	f 3xij.
Alcohol.....	q. s.
Gun Cotton.....	grs. 128.

Proceed in same manner as collodion with capsicum.

*Collodion with Black Pepper.*

R. Grd. Blk. Pepper.....	℥iv.
Ether .....	f 3xij.
Alcohol .....	q. s.
Gun Cotton.....	128 grs.

Proceed in same manner as in collodion with capsicum.

VESICANTS.

*Collodion with Cantharid's.*

R. Powd. Cantharides.....	℥iv.
Ether .....	f 3xij.
Stronger Alcohol.....	q. s.
Gun Cotton.....	80 grs.

Moisten the cantharides with a small portion of the ether, and pack in a conical percolator. Then pour on the balance of the ether, mixed with 4 fluidounces alcohol, and follow with enough alcohol to recover 16 fluidounces, in which dissolve the gun cotton.

These collodions can be used as substitutes for many of the official plasters, having the advantage of occupying a small bulk, ready adaptability to any surface, and powerful therapeutic action.

I have endeavored, as far as possible, to give some practical information on a branch of pharmacy of which comparatively little is known. The subject is, I think, an important one, since gun cotton and collodion occupy a high position in both medicine and the useful arts, and to its elaboration and useful application too much study cannot be devoted.

CITRATE OF IRON AND BISMUTH.

A New Remedy for Dyspepsia, &c.

By CHARLES RICE.

Although I call this preparation new, it has been in use for several years in the public hospitals and dispensaries of this city, and also in private practice, and has acquired the reputation of being one of the most prompt and valuable remedies at present known for gastric disturbances, depending upon an abnormal or defective digestion generally, and particularly so for the gastric intolerance of consumptive patients. Its action is often so prompt that one full dose has in many instances afforded immediate relief.

Being requested some years ago to devise a liquid preparation containing bismuth and iron (at that time intended for use in some other complaints), I finally, after various trials, adopted the following formula, which I have followed ever since:

Take of citrate of bismuth, ammonio-citrate of iron, each 320 grs.; water of ammonia, water, each a sufficient quantity.

With 4 oz. of water rub the citrate of bismuth into a smooth paste; gradually add water of ammonia until solution has taken place, being very careful not to have an excess of ammonia. Now add the ammonio-citrate of iron and some more water; dissolve, filter, and wash the filter with enough water to make the solution measure 1 pint.

This solution, if intended to be long kept, may be partly made up with glycerin, although I cannot speak from experience whether it is so well borne by the stomach. A more useful addition, however, is good sherry wine, of which there may be used 10 fl. oz. (or perhaps more), in place of so much water.

The above solution is prescribed under the name of *Liquor Ferri et Bismuthi Citratis*, and contains in 1 fluid-drachm  $2\frac{1}{2}$  grains each of citrate of bismuth and ammonio-citrate of iron. The dose is from 1 to 2 fluid-drachms, half an hour before meals, or—when required—after meals.

It is, of course, no true double salt, chemically speaking, but only a mixture of ammonio-citrate of bismuth and ammonio-citrate of iron; and, although a true double salt containing those elements might perhaps be prepared, I doubt whether it could have any better effects.

The solution may also be prepared of a concentrated state, and spread upon plates of glass to dry, yielding exceedingly handsome scales of a golden-brown color, which must be protected from the light, and 5 grains of which are equal to 1 fluid-drachm of the solution.

*New York, May 5th, 1872.*

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#### IODIDE AND BROMIDE OF POTASSIUM.

BY CHAS. D. CHASE.

The object of this note, as will be seen, is simply to call the attention of dispensers to the fact that most of the iodide and bromide of potassium found in the market, instead of being neutral, are alkaline in their reactions, and to illustrate the importance of this fact being generally known, the following is given.

The following prescription was prepared, with results as given below:

R. Morph. Sulph.,	gr. iv.	
Aquæ Cinnam.,	℥ij.	
Potass. Bromid.,	℥iij.	
Syr. Tolut.,	℥iss.	
Elix. Calisayæ,	℥iv.	M.

The morph. sulph. was weighed and introduced into a four-ounce vial, the potass. bromid. weighed and rubbed in a mortar with the aqua cinnam. until entirely dissolved, and the solution poured over the morph. sulph. contained in the vial. The morph. sulph. refusing to dissolve after shaking, the vial was set aside and the preparation begun anew.

This time the morph. sulph. was dissolved in the elix. calisayæ, the potass. bromid. in the aqua cinnam., and the two solutions mixed.

A precipitate immediately followed, which, upon the addition of the syr. toluat., and after shaking, slowly arose to the surface of the mixture.

The preparation not being entirely satisfactory, a few experiments were made with the view of ascertaining the cause of precipitation. To be assured that the fault was not with the aqua cinnam. (which had been made by distillation from the bark), the prescribed quantity each of morph. sulph. and potass. bromid. was dissolved separately in distilled water, and the two solutions mixed.

The same result was obtained as when aqua cinnam. was used as the solvent.

An examination was next made of the morph. sulph. (Powers & Weightman's), which proved to be pure sulphate of morphia. The chances for the potass. brom. to prove perfectly faultless now looked rather "slim." A solution of the suspected salt (also bearing P. & W.'s label) was made in distilled water, and tested with litmus and turmeric paper. The solution gave with both papers a decided alkaline reaction, which fact solved the mystery of the precipitation; for, as is well known, the alkalies and their carbonates precipitate morphia from solutions of its salts; and when the morph. sulph. solution came in contact with the free alkali (potassa) contained in the potass. bromid. solution, the precipitate must inevitably have taken place.

Several samples each of iodide and bromide of potassium were tested with turmeric paper, and in every instance the same alkaline reaction was observed.

The foregoing serves to show how serious accidents might occur by

dispensing the salts of morphia (or other alkaloids) with iodide or bromide of potassium which gives an alkaline reaction; for if prescribed with syrup, as in the above prescription, the precipitated morphia will rise to the surface of the mixture, and, should it not be "shaken before taken," the patient will be liable to take all, or nearly all, the morphine in the mixture at a single dose.

It is therefore advisable for the dispenser, whenever a morphia salt is prescribed with iodide or bromide of potassium in solution, to first dissolve the latter, test the solution with turmeric or red litmus paper, and if alkaline neutralize with dilute muriatic acid before adding the morphia salt; and a bottle of the acid mentioned and the necessary test paper should be placed convenient to the prescription counter, for this if for no other purpose.\*

With a small proportion of morphia salt the precipitate is often not observed until after standing a short time.

*St. Louis, April 18th, 1872.*

#### ON A NEW PROCESS FOR DETECTING BROMIDE IN IODIDE OF POTASSIUM.†

BY EDM. VAN MELCKEBEKE, D. SC.

The proposed process is based upon the property of a saturated solution of one salt to dissolve another one, provided the two salts do not produce a precipitate with each other. If to a saturated solution of bromide of potassium a small quantity of pure iodide of potassium is added, it will completely dissolve; but if it was contaminated with bromide of potassium, this impurity will remain undissolved. The quantity of iodide dissolved in this case is much smaller than that soluble in the same volume of water at the same temperature. This solubility has a limit which cannot be exceeded without precipitating bromide, caused by the isomorphism of the two salts, and by the great difference in their solubility.

It is known that a mixture of salts which are not isomorphous, dissolves always to a greater extent in water than either salt alone under

\* Commercial iodide of potassium is usually crystallized from alkaline solutions in order to obtain it in opaque cubes; recrystallization or granulation from water will effectually remove any adhering alkaline carbonate.—EDITOR AMER. JOUR. PHARM.

† Condensed from a paper read before the Société de Pharmacie d'Anvers, and communicated by the author.

the same conditions. Isomorphous salts behave differently. Von Hauer\* proved by interesting researches that, the physical conditions being identical, a given weight of a solution of mixed isomorphous salts contains the same quantity of solid matter which is contained in a like weight of a saturated solution of the most soluble salt.

100 parts of water dissolve, at  $16^{\circ}$  C., 140.10 p. iodide of potassium. The author found that the same quantity of water dissolves, at the same temperature, 63.39 p. bromide of potassium. At this temperature all the following experiments have been made.

When an excess of a mixture of bromide and iodide of potassium is treated with water, 100 p. of it dissolve 140 p. of the mixture, and the analysis of the dissolved portion proves it to be solely iodide of potassium. Von Hauer's proposition may, for this case, be rendered as follows: If a mixture of bromide and iodide of potassium is treated with water, the latter salt alone is dissolved, if its quantity is sufficient to saturate the water.

It might be supposed that 100 p. of water saturated with bromide would dissolve  $140.10 - 63.39 = 76.71$  iodide of potassium; such is, however, not the case. Only 13.15 p. of iodide are taken up, and if more is added, bromide of potassium is precipitated. If double the weight of KBr, soluble in 100 water ( $2 \times 63.39 = 126.78$ ), is deducted from the weight of KI soluble in the same quantity (140.10), the resulting figure (13.32) closely approaches 13.15 found by experiment, and represents the maximum solubility of KI in 100 water saturated with KBr, which is equal to about 10 parts of the former salt in 100 of the saturated solution.

If pure iodide and bromide of potassium be dissolved separately to saturation in water, the temperature falls  $21^{\circ}$  and  $15^{\circ}$  C. This fall in the temperature must be taken into consideration in making the saturated solution of KBr, and in adding thereto the iodide, particularly if larger quantities are operated upon. The bromide of potassium is, therefore, dissolved in warm distilled water, the solution is allowed to cool, and after crystallization decanted or filtered.

To 10 c. c. of this solution 10 drops of distilled water are added in a test-tube, and afterwards, in small quantities, under repeated agitation, 1 gram. of the suspected iodide in coarse powder. If free from bromide, it will dissolve almost instantly, while this impurity, if present, will remain undissolved.

\* Journal für Praktische Chemie, vols. xxviii and ciii.

The addition of water is not indispensable, if the iodide is introduced carefully little by little and the liquid well agitated. If these precautions are not observed, the iodide dissolving rapidly, will locally precipitate some bromide, and render the result doubtful. If 10 drops of water are previously added to the 10 c.c. of the saturated solution this inconvenience is avoided.

The water added will scarcely dissolve any bromide of potassium. In making the experiment before the Pharmaceutical Society of Antwerp, a small fragment of bromide was mixed with 1 grm. of iodide of potassium, and remained unaltered for at least twenty minutes after the gradual addition and solution of the iodide.

The author recommends this perhaps more empirical than scientific process, not with the view to supersede the more exact though more tedious ones, but rather as a quick and practical method to detect the falsification of iodide with bromide of potassium, as well as its substitution by the latter salt.

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#### ON SOME CONSTITUENTS OF ERICACEOUS PLANTS.

By JEFFERSON OXLEY.

From the Author's Inaugural Essay.

Of this order *Uva ursi* and *Chimaphila umbellata* have, upon examination, been found to contain arbutin, urson and ericolin. Thinking it of some interest to know if these principles are alike common to other plants of the same order, *Gaultheria procumbens* and *Epigæa repens* were submitted to examination.

From two pounds of *Gaultheria*, as usually found in market, after removing the larger stems, the remaining leaves and smaller stems weighed one pound and six ounces, showing a loss of 31 per cent. Garbling one pound and a half of *Epigæa repens* in the same manner, one pound of leaves and small stems remained, indicating a loss of 33 per cent.

Reduced to a convenient powder they were digested with water during several hours, strained and expressed, and a second time submitted to like treatment. Upon drying the residue, the *Gaultheria* weighed twelve ounces, a loss of 45 per cent. *Epigæa repens* weighed ten and a half ounces, a loss of about 34 per cent.

The infusions were treated with neutral acetate of lead, the filtrates with subacetate of lead, and filtered. The resulting solutions were almost free from color, being a light yellow. The lead was re-

moved with sulphuretted hydrogen, the solutions filtered and heated to remove excess of hydrosulphuric acid. After concentrating and treating with ammonia to neutralize the acetic acid present, then with animal charcoal, and washing with cold water, the filtrates were reduced by heat, and set aside to evaporate spontaneously. After several days, crystals not appearing, a portion was separated and treated with alcohol, leaving a large per cent. of insoluble extractive matter. The alcoholic solutions were allowed to evaporate to a syrupy consistency, but without the formation of crystals.

At this point the extract of *Epigæa repens* was of a deep reddish-brown color, very much resembling liquorice in odor and taste. On adding sulphuric acid to a dilute solution of this extract, no precipitate was produced indicating the absence of glycyrrhizin.

The extracts were dissolved in water, treated with animal charcoal, washed, and the filtrates set aside to evaporate, but failed to yield crystals. The charcoal used in the latter case was digested with alcohol. The alcoholic solutions in each case had a slight color; that from *Epigæa repens* light yellowish-brown, from *Gaultheria* light green. Upon evaporation these solutions yielded a small crop of crystals.

The evaporation was continued for several days, with the hope of a large yield; upon examination the crystalline structure was found in a great measure lost. The yield was too small to apply the various tests for arbutin. Jungmann's test\* was applied. A dilute aqueous solution rendered alkaline with ammonia, produced, on the addition of phosphomolybdic acid, a blue color.

A portion of the reserved aqueous extract was submitted to like treatment, producing the blue reaction due to arbutin; the formation of crystals and the reaction with phosphomolybdic acid warrant the conclusion that arbutin is present in each of the plants under consideration. However, it seems present in a much smaller proportion than in *Uva ursi* or *Chimaphila umbellata*, and separated with much more difficulty.

The above extracts were dissolved in a dilute solution of sulphuric acid and distilled, the distillates possessing a peculiar and rather agreeable odor, indicating the presence of a volatile principle liberated by the action of the acid. The distillates possessed an acid reaction, due, no doubt, to the acetic acid present in the lead salt

\* American Journal of Pharmacy, 1871, p. 207.

used in the early part of the process. Neutralized with bicarbonate soda and redistilled, the odor remained intact, and the distillates possessed a slight acid reaction. Neutralizing the residue with nitric acid, treating with sesqui salts of iron, produced in each a red color, which was removed upon the addition of a strong acid. Nitrate of silver and protonitrate of mercury gave precipitates which, by heat, liberated the metals in the case of *Epigæa repens*, but not so in that of *Gaultheria*. With a mixture of alcohol and sulphuric added, each gave an odor characteristic of acetic ether, indicating acetic acid. The reaction with the solution from *Epigæa repens* indicated the probable presence of formic acid.

An infusion of *Uva ursi* was also distilled in the presence of sulphuric acid. The odor of the distillate was found, on comparison, to be quite similar to those referred to, that from *Gaultheria* varying somewhat, perhaps owing to the volatile oil.

A portion of the dried leaves remaining from the infusions was treated by percolation with alcohol; the resulting tinctures were of a deep green color, that from *Gaultheria* possessing a beautiful emerald hue. Allowing the tinctures to evaporate spontaneously, the residue was put upon a filter and washed with alcohol to remove the chlorophyll: that from *Epigæa repens* parted with this coloring matter more readily than *Gaultheria*; urson was not obtained in a pure state, but sufficiently so to be sublimed in a test tube. The action of reagents could not be brought to bear upon the principles isolated, owing to the presence of chlorophyll, but as far as examined they agree with urson.

A portion of the precipitates obtained by treating the infusions with acetate of lead was freed from lead. The presence of tannin in the solution was indicated by the production of precipitates with solutions of gelatine, salts of iron (black), tin, mercury, copper, silver (a liberation of the metal by heat), and by the deep red color with alkalies. After freeing the solution from tannin by gelatine, several reagents indicated the presence of gallic acid. After evaporating a portion of the solution with some sand to dryness, and subliming in Mohr's benzoic acid apparatus, pyrogallie acid was not obtained; therefore gallic acid is not present, but a principle having similar reactions. Trommer's test gave reactions indicating grape sugar.

A concentrated infusion of the leaves was precipitated by alcohol, and the dried precipitate was found to contain gum.

The stems and the leaves of *Gaultheria* and *Epigæa*, when distilled with water, did not yield chimaphilin, discovered by Mr. Samuel Fairbank.\* In the distillate from the stems of *Chimaphila umbellata* orange red crystals of chimaphilin were obtained, and the yellow aqueous distillate yielded more of the same crystals when agitated with ether.

Among the organic constituents of *Gaultheria* and *Epigæa* have been found, by this examination, arbutin, urson, ericolin, tannic acid, and a principle analogous to gallic acid, formic acid (in *Epigæa*), grape sugar, gum and coloring matter.

#### ON THE BARK OF JUGLANS CINEREA.

By CHARLES O. THIEBAUD.

From the Author's Inaugural Essay.

A quantity of the fresh bark was gathered, carefully dried and powdered. From a portion of this a decoction was made, and the following reactions observed. No precipitate occurred after acidulation with nitric acid by iodo-hydrargyrate of potassium, thus proving the absence of an alkaloid. Dilute solutions were reddened upon the addition of an alkali. The vapor arising from both the decoction and aqueous extract gave acid indication to moistened litmus, the vapor from the extract turning it a decided cherry-red color. A portion of the powdered bark, moistened with water slightly acidulated with sulphuric acid, and introduced into a retort, gave a straw colored distillate with a faint fusel oil odor, acid to litmus and reddened by alkalies. This being made slightly alkaline by ammonia and set aside in a drying closet, after evaporation to dryness yielded a small quantity of slightly yellowish prismatic crystals, scarcely soluble in alcohol, and with acid reaction. The bark distilled with pure water gave a distillate with acid reaction, but deposited no crystals upon evaporation. The distillate obtained by treating the bark with water rendered slightly alkaline by carbonate of soda was neutral to test paper. These experiments prove a volatile acid to be present in the bark.

The decoction was treated by acetate of lead, the precipitate suspended in water, freed from lead by saturation with hydrosulphuric acid and filtration; the solution evaporated to dryness on a water-

\* See Journal of the Maryland College of Pharmacy, March, 1860.

bath, exhausted by alcohol, and the alcoholic solution evaporated in the drying closet to a resin-like extract. This was redissolved in alcohol, and set aside in a cool place. After a few days small acicular crystals were found floating on the liquid. These crystals were in small quantity, colorless, and colored litmus red.

The filtrate was freed from lead by hydrosulphuric acid, and evaporated to dryness on a water-bath; the residue, exhausted by alcohol and evaporated, yielded a bitter extract like mass, soluble in both alcohol and water.

These results not proving satisfactory by the isolation of an acid in quantity sufficient for further examination, the peculiar solvent properties of true benzole were brought into requisition.

A portion of the freshly dried and powdered bark was macerated in this menstruum for four days. The benzole, which at first was colorless, after separation from the refuse matters by expression and filtration, was of a decided bright yellow color. This was set aside and allowed to evaporate spontaneously. After the evaporation had been carried on until the residue ceased to lose weight, the capsule was found to contain a thick oily substance, and the sides were covered by short acicular crystals of a bright orange-yellow color. These exhibit decided acid properties to litmus, are soluble in alcohol and ether, but scarcely so in water. They volatilize without fusing, in solution are reddened by ammonia, and are turned pale violet by potassa, afterwards becoming red. The oily residue remaining after the evaporation of the benzole, was exhausted with alcohol, and the alcoholic solution by spontaneous evaporation yielded crystals similar in form, size and reaction to those deposited on the side of the capsule. The residue insoluble in alcohol was taken up by ether, allowed to evaporate spontaneously to a syrupy consistence, and spread on bibulous paper; thin tabular crystals were obtained which were colorless, acid to litmus, insoluble in water, scarcely so in alcohol, but readily taken up by ether, which solution was not precipitated by chloride of calcium and not affected in color by ammonia or potassa. They are fusible, but being farther heated partly volatilize, leaving behind a charred mass, which burns without residue. The crystals when fused are changed to a dark red liquid, which when treated by ether becomes decolorized.

Chrysophanic acid is soluble in benzole, and since from juglans, by the use of the same solvent, a product is obtained which exhibits some

of the characteristics of the former, we may regard the two acids as closely related. The proper name of this constituent would be juglandic acid.

Solution of sulphate and tincture chloride of iron produced dense dark colored precipitates, but other tests did not prove the presence of tannin.

The decoction affords precipitates, and hence is incompatible with the sesqui- and proto-salts of iron, bichromate of potassium, sulphate of copper, acetate of lead, and nitrate of silver. No effect is produced by yellow and red prussiates of potassium, tannin and antimonial salts.

The bark contains bitter extractive, a large amount of oily matter, juglandic acid (which appears to be related to chrysophanic acid), an acid crystallizing in tabular colorless crystals, a volatile acid, and no tannin. The ashes were found to contain a considerable percentage of potassium, with traces of sodium, calcium and aluminium.

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NOTE ON CRYSTALLINE PRINCIPLE OF BARBADOES ALOES.\*

BY WILLIAM A. TILDEN, D.SC. LONDON,

*Demonstrator of Practical Chemistry to Pharmaceutical Society, G.B.*

This substance was examined some years ago by Dr. Stenhouse, who analyzed it and a bromo-derivative.

After several unsuccessful trials, I have obtained from it a chloro-substitute, corresponding to the brominated body already known. It is only necessary to treat the aloin with excess of chlorine in the presence of concentrated hydrochloric acid. This is most conveniently done by the method adopted by Stenhouse in preparing the chlorinated derivatives of orcin.

Some powdered potassic chlorate was introduced into a quantity of ordinary fuming hydrochloric acid. The crystallized aloin to be operated upon was dissolved in another portion of the same acid, and the solution so obtained, when quite cold, was poured gradually and with constant agitation into the mixture of hydrochloric acid and chlorate. After each addition of the aloin, a red coloration was produced, but this instantly disappeared, the solution assuming a clear orange color, and depositing in a few minutes a copious crop of yellow granules, the quantities of which increased by standing for a few hours. It was then filtered off, washed with a little water, and crystallized from

\* Reprint from the Journal of the Chemical Society, March, 1872. Communicated by the author.

warm rectified spirit. The tufts of bright yellow prisms which were deposited in a few hours were collected and dried by exposure to dry air. They bear, without change of color or general appearance, a temperature of  $120^{\circ}$  C., and even much higher. At  $120^{\circ}$  they lost weight in one experiment to the extent of 10.86, in another 10.04 per cent.

.237 gram gave by boiling with nitric acid and nitrate of silver .216 of chloride of silver, corresponding to 22.52 per cent. of chlorine.

The formula  $C_{17}H_{15}Cl_3O_7 \cdot 3H_2O$  requires 10.99 per cent of water, and 21.66 per cent. of chlorine.

The proportion of chlorine found being thus a little too high, the substance was recrystallized and carefully washed. This time it was dried at  $120^{\circ}$  previous to analysis.

I. .247 gram gave .251 chloride of silver.

II. .1835 gram, by combustion with a mixture of lead chromate and potassic dichromate, .062  $H_2O$  and .304  $CO_2$ .

Theory.		Experiment.	
		I.	II.
$C_{17}$ . . . . .	204	46.62	—
$H_{15}$ . . . . .	15	3.42	45.17
$Cl_3$ . . . . .	106.5	24.34	—
$O_7$ . . . . .	112	25.13	3.70
		—	—

Again, therefore, the chlorine is rather above, and the carbon below the theoretical numbers, although they are sufficiently near to leave no doubt as to the identity of the body. I think it probable, therefore, that notwithstanding that the crystals are to all appearance clean, and when dissolved in water give no trace of turbidity with nitrate of silver, they are contaminated with a small quantity of another similar body, containing a higher percentage of chlorine.

This chloraloin is more soluble in water than the corresponding compound containing bromine, and differs from the original aloin in its comparative stability. Thus, although very soluble in aqueous ammonia, it will crystallize out but little altered when the ammonia is allowed to evaporate, and it may be dissolved in ordinary nitric acid (sp. gr. 1.37), without change of color.

The aloin from which this body is derived, when acted upon by nitric acid, yields, besides oxalic and picric acids, rather more than

30 per cent. of its weight of chrysammic acid; and in fact I find it a more convenient source of chrysammic acid than crude aloes. But the chlorinated compound, boiled with nitric acid and nitrate of silver, furnishes oxalic and picric acids only, without a trace of either aloetic or chrysammic acid.

In most of the reactions of aloin and its chloro- and bromo-derivatives, there is such a marked parallel with those of the orcins, that I think it worth while to submit them to a further examination.

# GLEANINGS FROM THE EUROPEAN JOURNALS.

BY THE EDITOR.

*Non-existence of Igasuria.*—This alkaloid, discovered by Desnoix, and of which Schützenberger claimed to have obtained several modifications, is now stated to be identical with brucia. Jörgensen found that the igasuria exhibited by Ménier at the last Paris Exposition, when treated with periodide of potassium, yielded an iodine compound identical in composition and behavior with the body obtained from brucia under the same conditions.—*Wittstein's Vierteljahres Schr.*, 1872, 275.

*Reactions of Quinia and Morphia.*—Prof. Flückiger finds the practical limit of the reaction of chlorine water and ammonia upon quinia (green coloration) to be aqueous solutions containing about  $\frac{1}{5000}$  alkaloid. The brown coloration produced by the same reagents with morphia is visible in solutions of  $\frac{1}{1000}$  alkaloid, while the iodic acid reaction is observed in solutions ten times weaker. The coloration produced with morphia dissolved in 500 to 200 or less water will hide the green color of thalleiochin; but if the solution contains  $\frac{1}{1000}$  morphia and only  $\frac{1}{3000}$  quinia, the green coloration only will be visible. In a mixture of quinia and morphia, the reactions of either alkaloid with chlorine and ammonia may be produced, depending mainly upon the amount of morphia contained in the solution.—*N. Jahrb. f. Pharm.*, 1872, March, 136—143.

*Yield of Opium Plantations.*—Jul. Schrader planted 32 square rods with poppy, and raised 3749 capsules (117 to the square rod), from which he obtained 9 $\frac{3}{4}$  oz. well dried opium, containing 11 per ct. morphia; each capsule, therefore, yielded 1 $\frac{1}{8}$  grain opium. One (German) acre would yield, accordingly, 112 $\frac{1}{2}$  oz. opium, the value of

which may be regarded as profit, since the seeds will cover the expenses for labor and manure. To prove that the seeds do not suffer by the preparation of the opium, the author selected 160 scarified and the same number of unscarified capsules, of about uniform size, and obtained from each lot nearly 15 oz. seeds, which yielded in each case almost 6 oz. of fixed oil by warm expression.—*Ibid.*, 163.

*The Asserted Presence of Table Salt in Extract of Meat\** is discussed by Prof. Liebig, who refers to his researches published 24 years ago,† when he proved that the meat juice of all animals is rich in potassium, that it contains chloride of potassium, but only traces of chloride of sodium. After the salts of inosic acid have been precipitated by the addition of alcohol, the further addition of about five volumes of alcohol will cause a separation of the liquid into two layers, the lowest of which (about one-twentieth of the upper one) is syrupy, and will yield in the cold prisms of pure chloride of potassium, containing not a trace of chloride of sodium. This is the more remarkable, since the meat juice is not free from sodium, which must be combined with another acid.—*Zeitschr. d. oesterr. Apoth. Ver.*, 1872, No. 10.

*Distribution of Atropia in the Leaves and Root of Belladonna.*—To determine this J. Lefort exhausts 100 grm. of the fine powder with alcohol of 86°, evaporates the alcohol, and adds water to obtain after filtration 50 c.c. solution, to which a slight excess of iodo-hydrargyrate of potassium is added; the precipitate is collected upon a weighed filter, washed, and dried by the aid of hot air. It contains 33.25 atropia.

The leaves were collected from plants cultivated near Paris, in May, before flowering, and in August, when the berries began to ripen. 1000 parts of dry material yielded, by four analyses, in May, 0.418, 0.405, 0.421 and 0.392, and in August, 0.457, 0.443, 0.467 and 0.482 atropia. By assaying leaves from cultivated and wild plants, collected at the same season, the former yielded 0.470 and 0.485, the latter, 0.459 and 0.477 alkaloid. The author concludes, therefore, that the leaves collected from wild and cultivated plants are equally reliable if collected during the season of flowering and fructification.

\* Amer. Journ. Pharmacy, 1872, p. 213.

† Annalen der Chemie und Pharmacie, lxii, 257.

The root (when collected?) was found to contain, when 2 to 3 years old, 0.4718 and 0.4886, when 7 to 8 years old, 0.2541 and 0.3126 alkaloid. Belladonna root collected in Germany (Hesse-Darmstadt) yielded 0.492, against 0.478 alkaloid obtained from the French root.

For medicinal use, the author regards the leaves as preferable to the root, they varying less in their strength.—*Journ. de Pharm. et de Chim.*, 1872, April, May.

*Anhydrous Protoxide of Iron* is obtained by G. Tissandier by passing carbonic acid gas over very fine iron wire, rolled up spirally into bundles and heated to a bright redness in a porcelain tube. It is black, shining, of a crystalline aspect, magnetic, unaltered in the air, soluble in muriatic and nitric acids, but insoluble in warm sulphuric acid.—*Ibid.*, 379—381.

*Detection of Arsenic and Sulphurous Acid in Hydrochloric Acid.*—Hager puts a little hydrochloric acid, diluted, if necessary, with an equal volume of water, in a long test-tube, adds a little pure zinc, and closes the tube with a loosely fitting cock, to which two strips of parchment paper are attached, previously moistened on one side (the outside) with solution of nitrate of silver and of acetate of lead. If arsenious acid is present, the former only will be blackened; if sulphurous acid is likewise present, both papers will turn black in the current of the escaping gas. A second experiment becomes then necessary in a tube similarly arranged. The sulphurous acid is first oxidized by permanganate of potassa until the liquid acquires a yellow or brownish tint, or until a faint smell of chlorine is perceptible. After the addition of zinc, the arseniuretted hydrogen contained in the gas evolved will blacken the silver paper only, without affecting the lead paper.—*Pharmac. Centralhalle*, 1872, No. 11.

*Oil of Turpentine an Antidote to Phosphorus.*—This was first recommended by Personne. H. Köhler and Schimpf confirm his results by experiments with 25 animals. Pure oil of turpentine dissolves phosphorus and separates it unaltered on cooling. But when the oil contains oxygen, a crystalline mass resembling spermaceti is produced, while any excess of phosphorus is rapidly converted into the red modification. The white mass may be purified, by recrystallization from alcohol, has an acid reaction, rapidly softens in contact with air, acquires a terebinthinate odor, and then contains phosphoric acid. This terebintho-phosphorous acid dissolves in alcohol, ether, petroleum-ben-

zine, benzol and alkalies; it forms with the earths and metallic oxides insoluble salts, the baryta salt having the formula  $C_{20}H_{15}PO_2Ba$ . Rabbits and dogs bear as much as 0.3 grm. of terebintho-phosphorous acid, in alcoholic solution, without any toxic effect; the urine acquires a camphoraceous odor, and the distillate reduces silver salts.

It has not been ascertained yet whether pure oil of turpentine (free from oxygen) is an antidote to phosphorus.—*Ibid.*, No. 16, from *Berl. Klin. Wochenschr.*

*Tannin containing Iron* has been met with by Dr. H. Hager. It had been mixed with 0.8 per ct. oxalic acid, which prevented the ink color from appearing when dissolved in pure water; when, however, the water contained an alkali, the blue-black coloration was at once produced.—*Ibid.*, No. 18.

*Preparation of Saffranin.*—This dye stuff, which has been used for some time as a substitute for safflower for dyeing cotton and silk, is prepared by heating a mixture of 2 parts nitrite of anilin and 1 part arsenic acid, for 5 minutes, to between 80 and 120° C. The mass is poured into boiling water, and the solution neutralized with chalk, when it acquires a beautiful red color. It is then carefully passed through a woollen filter, and the filtrate precipitated by dissolving table salt in it, when, after some time, saffranin is deposited and may be collected on a filter.

The nitrite of anilin is made by passing washed nitrous acid, obtained from starch and nitric acid, into a mixture of oily anilin, water and salt, the process being completed when the light brown color has changed to a deep chestnut-brown. After washing several times with water, the product is sufficiently pure for the above purpose.—*Ibid.*, from *Musterzeitung*.

#### NOTE RELATIVE TO THE MONOBROMATED CAMPHOR.

BY WILLIAM A. HAMMOND, M.D.

Several months since, a statement\* was made in *The Doctor* to the effect that a Belgian physician had for more than ten years past made use of the monobromated camphor in delirium tremens and analogous nervous diseases. Desiring to test its value in such affections, I requested Dr. Neergaard to obtain a quantity of the preparation for

\* American Journal of Pharmacy, 1872, p. 84.

my experiments. Prof. Maisch, of the Philadelphia College of Pharmacy, very kindly undertook to manufacture it, and, overcoming the great difficulties of the process, succeeded in obtaining it in beautiful crystals free from the slightest yellow tinge.

My experience with the monobromated camphor, though thus far limited, is eminently satisfactory. I have employed it in two cases of infantile convulsions due to the irritation of teething, with the effect in each instance of preventing the further occurrence of paroxysms which, previously to its administration, had been very frequent. In each case a grain was given every hour, rubbed up with a little mucilage of acacia. Three doses were sufficient in one, and two in the other case. The children were aged respectively fifteen and eighteen months.

In a very obstinate case of hysteria occurring in a young married lady, in the form of paroxysms of weeping and laughing, alternating with epileptiform and choreiform convulsions, I gave the monobromated camphor in doses of four grains every hour. The influence was distinctly perceived after two doses were taken, but ten were necessary to entirely break up the attack. This was a very favorable result, as all previous seizures had lasted for from five to eleven days, uninfluenced by medication or moral suasion.

I have also employed it with excellent effect in several cases of headache occurring in women and young girls, and due to mental excitement and excessive study. One dose of four grains was generally sufficient to cut short the attack. In two cases, three doses at intervals of half an hour were necessary.

In wakefulness, the result as it so generally is of cerebral hyperæmia, the monobromated camphor appears to be greatly inferior to the bromide of calcium or even the other bromides. But it is apparently indicated in delirium tremens. I have not yet had the opportunity of trying it in this disease, but I should not hesitate in a case of the affection to administer it in doses of five grains every hour or half-hour, with the confident expectation that sedation and sleep would result.

The monobromated camphor may be given in the form of pill, with conserve of roses as the excipient, or as a mixture with mucilage of gum arabic and syrup. The dose for adults ranges from two to five grains.—*New York Medical Journal, May, 1872.*

## DISINFECTANTS.

A commission appointed by the French Academy to investigate the relative merits of various disinfectants for use in hospitals where contagious diseases are treated, have made the following report as the result of their experiments :

*Hyponitrous Acid.*—The members of the commission agree that the first place among agents for attacking and destroying infectious germs must be accorded to *hyponitrous* acid. Extraordinary precautions must, of course, be observed in making use of this dangerous gas; the doors and windows must be carefully sealed with gummed paper when disinfecting a room containing 40 or 50 cubic yards. The materials are taken in the following proportions: 2 quarts of water,  $3\frac{1}{2}$  pounds of ordinary commercial nitric acid, and  $\frac{1}{2}$  pound of copper turnings or filings. A stoneware vessel is employed, holding two or three gallons. The exit doors are carefully pasted up, and the room left closed for 48 hours. The person opening the room at the expiration of the time should be protected in some way from breathing the gas, by a suitable respirator.

*Carbolic Acid.*—This is cheaper, more easily used, less dangerous, and has proved equally efficacious. It is best employed mixed with sand or sawdust—one pound of acid to three pounds of an indifferent substance. The mixture, placed in earthen vessels, was used for the same purpose as the hyponitrous acid. Carbolic acid, diluted with 15 or 20 parts by weight of water, was found useful for daily sprinkling of the floor and bed-clothes.

An interesting case is mentioned in the report where neither chlorine nor hypochlorous acid was able to destroy or render odorless the gases given off from the corpses in the Paris Morgue during the heat of summer. The object was attained by dissolving a quart of liquid carbolic acid in 500 gallons of fresh water, contained in the reservoir and used to sprinkle the bodies. Putrefaction was entirely stopped.

Devergie found that water containing only one to four thousand part of its weight of carbolic acid sufficed to disinfect a dead house, even in the hottest weather, when six to eight corpses were in it.

For fumigating linen, mattresses and other bedding with chlorine, Régnault's latest method was used, namely: One pound of chlorinated lime (bleaching powder) is sewn up in a strong bag of sail cloth, holding about a quart, and put in an earthen pot contain-

ing a quart of common muriatic acid (sp. gr. 1.15) and three quarts of water. As soon as the acid comes in contact with the chloride of lime the room is closed, and the things exposed to the action of chlorine gas for 24 hours; the room is then aired for 48 hours. Ten such earthen pots give off 500 litres of chlorine, sufficient to disinfect from 20 to 25, more or less, dirty mattresses.—*Scientific American*, May 18, 1872.

#### THE TALLOW TREE AND ITS USES.

By D. J. MACGOWAN, M.D.

The botanical characters of this member of the *Euphorbiaceæ* are too well known to require description; but hitherto no accurate account has been published of its various uses. Although it has become a common tree in some parts of India and America, its value is appreciated only in China, where alone its products are properly elaborated. Analytical chemistry shows animal tallow to consist of two proximate principles—stearine and elaine. Now, what renders the fruit of this tree peculiarly interesting is the fact that both these principles exist in it separately in nearly a pure state. Nor is the tree prized merely for the stearine and elaine it yields, though these products constitute its chief value; its leaves are employed as a black dye; its wood is hard and durable, and may be easily used for the blocks in printing Chinese books and various other articles; and, finally, the refuse of the nut serves for fuel and manure.

The *Stillingia Sebifera* or tallow tree is chiefly cultivated in the provinces of Kiang-se, Kiang-nau and Chih-kiang. In some districts near Hang-chau the inhabitants defray all their taxes with its produce. It grows alike on low alluvial plains and on granite hills, on rich moulds on the margin of canals, and on the sandy sea beach. The sandy estuary of Hang chau yields little else. Some of the trees at this place are known to be several hundred years old, and, though prostrated, still send forth branches and bear fruit. Some are made to fall over rivulets, forming serviceable bridges. They are seldom planted where anything else can conveniently be cultivated, but generally in detached places, corners about houses, roads, canals, fields, etc.

In winter, when the nuts are ripe, they are cut off with the twigs by a sharp bill hook attached to the extremity of a long pole, which

is held in the hand and pushed upwards against the twigs, removing at the same time such as are fruitless.

The harvesting accomplished, the capsules are taken and gently pounded in a mortar to loosen the seeds from their shells, from which they are separated by sifting. To facilitate the separation of the white sebaceous matter enveloping the seeds, they are steamed in tubs having convex, open wicker bottoms, and placed over caldrons of boiling water. When thoroughly heated they are mashed in the mortar and then transferred to bamboo sieves, kept at a uniform temperature over hot ashes.

As a single operation does not suffice to deprive them of all their tallow, the steaming and sifting is therefore repeated. The article thus procured becomes a solid mass on falling through the sieve, and, to purify it, is melted and then formed into cakes for the press. These receive their form from bamboo hoops, a foot in diameter and three inches deep, which are laid on the ground over a little straw. On being filled with the hot liquid, the ends of the straw underneath are drawn up and spread over the top, and, when of sufficient consistence, are placed with their rings in the press. This apparatus, which is of the rudest description, is constructed of two large beams placed horizontally so as to form a trough capable of containing about fifty of the rings, with their sebaceous cakes. At one end it is closed and at the other adapted for receiving wedges, which are successively driven into it by ponderous sledge hammers wielded by athletic men.

The tallow oozes in a melted state into a receptacle where it cools. It is again melted and poured into tubs smeared with mud to prevent adhering. It is now marketable in masses of about eighty pounds each, hard, brittle, white and opaque, tasteless, and without the odor of animal tallow. Under high pressure it scarcely stains bibulous paper; it melts at 104° Fah. It may be regarded as nearly pure stearine; the slight difference is doubtless owing to the admixture of oil expressed from the seed in the process just described. The seeds yield about eight per cent. of tallow, which sells for about five cents per pound.

The process for pressing the oil, which is carried on at the same time, remains to be noticed. It is contained in the kernel of the nut; the sebaceous matter which lies between the shell and the husk having been removed in the manner described, the kernel and the husk covering it are ground between two stones, which are heated to prevent

clogging from the sebaceous matter still adhering. The mass is then placed in a winnowing machine precisely like those in use in western countries. The chaff being separated, the white oleaginous kernels are exposed, and, after being steamed, are placed in a mill to be mashed.

This machine is formed of a circular stone groove twelve feet in diameter, tapering at the edge, and is made to revolve perpendicularly by an ox harnessed to the outer end of its axle, the receiver turning in a pivot in the centre of the machine. Under this ponderous weight the seeds are reduced to a mealy state, steamed in tubs, formed into cakes and pressed by wedges in the manner before described, the process of mashing, steaming and pressing being likewise repeated with the kernels.

The kernels yield about thirty per cent of oil. It is called *tsing-yu*, and sells for about three cents per pound. It answers well for lamps, though inferior for this purpose to some other vegetable oils in use. It is also employed for various purposes in the arts, and has a place in the Chinese pharmacopœia because of its quality of changing gray hair to black, and other imaginary virtues. The husk which envelopes the kernels and the shell which encloses them, and their sebaceous covering, are used to feed the furnaces; scarcely any other fuel is necessary for this purpose. The residuary tallow cakes are also employed for fuel; a small quantity of it remains ignited a whole day. It is in great demand for chafing dishes during the cold season.

Finally, the cakes which remain after the oil has been pressed out are much valued as a manure, particularly for tobacco fields, the soil of which is rapidly impoverished by that plant.—*Scientific American*, May 4th, 1872.

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#### CRYSTALLIZED DIGITALINE.\*

By M. NATIVELLE.

The process adopted by the author for obtaining crystallized digitaline, a magnificent specimen of which accompanied the memoir, consists, in the first place, in exhausting the *digitalis* in 50† alcohol, in-

\* Extracted from the Report by M. Buignet, on behalf of the Commission, recommending the award of the Orfila prize (6000 francs) to the Author.

† The British Pharmacopœia orders rectified spirit.

stead of water, as ordered in the French Codex. He found that while the product obtained by an aqueous maceration contained chiefly an amorphous principle, soluble in all proportions in water, which he proposed to call *digitaleine*, the residue, usually rejected as useless and completely exhausted, contained nearly all the active crystallizable principle, together with another very bitter principle, approaching it in its properties, but not crystallizable. The alcoholic tincture so prepared was distilled, and the residue of the distillation concentrated to a weight equal to that of the *digitalis* originally used. Here the author introduces a modification based upon what is generally observed where several principles exist simultaneously in the same plant, that these exercise towards each other a particular influence, which determines or favors their reciprocal solution in the same liquid. This faculty, however, is manifested chiefly in a concentrated solution, being weakened or completely annulled when the solution is diluted. Thus, a concentrated solution of opium may contain, not only the principles dissolved directly by the water, but also more or less resin carried into solution by the influence of those principles, and which separates when the solution is diluted by a certain proportion of water. So with *digitalis*, in the concentrated solution that represents the product of evaporation after the alcohol is driven off, is found in solution, not only the principles directly soluble in water, like *digitaleine*, but other principles, such as *digitaline* and *digitine*, which, insoluble in themselves, are kept in solution by the influence of the preceding in a concentrated solution. If, however, this solution be diluted by three times its weight of water, a gradually augmenting viscous deposit is formed, which represents nearly the whole of the *digitaline*, accompanied, it is true, by *digitine* and coloring matter, but freed from the *digitaleine* and other soluble principles—according to the author the chief obstacles to crystallization.

In order to extract from the viscous deposit the two crystallizable principles that it contains, it is to be dried in the open air, upon folds of filtering paper, and afterwards treated with twice its weight of boiling proof spirit. The filtered solution, left in a cool place, is quickly covered on the surface with crystals, which also form on the side of the vessel. This goes on for eight or nine days before the liquor is completely exhausted. The crystals are then separated, and after washing with weak alcohol are nearly completely colorless. The *digitaline* is then separated from the *digitine* by successive treatment of

the crystals with chloroform, evaporating the chloroform, treating the deposit with eight times its weight of boiling 90 per cent. alcohol, adding a little washed animal charcoal, filtering and leaving to cool in a partially stoppered flask. The pure digitaline is then deposited in fine white and shining needles, grouped around the same axis. By this means, the two principles are effectually separated. The part dissolved is intensely bitter, giving a wonderfully intense emerald green coloration with hydrochloric acid, and having such a powerful physiological action that a quarter of a milligram is sufficient to produce the ordinary effects of digitalis. On the contrary, the part undissolved by the chloroform is tasteless, giving no coloration with hydrochloric acid, and exercises no appreciable action upon the organism.

In order to verify the results described in the memoir, the commission followed the process step by step, and succeeded in obtaining a product identical with the specimen accompanying the memoir. They also undertook a series of physiological experiments, the result of which led them to the conclusion that the new medicament appeared to produce effects identical with the other preparations of digitalis, particularly the digitaline of MM. Homolle and Quevenne, but incomparably more energetic, while, from the definite nature of the compound, more constant results follow its use.—*Pharm. Journ., Lond., April 27, 1872.*

#### CHLORALUM AND PREPARATIONS OF CHLORALUM AS DISINFECTANTS.

BY PROF. A. FLECK.

The Central Chemical Institution, established last year in Dresden for the protection of the public health, of which Prof. Fleck is the director, received, amongst other things, the disinfectants introduced by the Chloralum Company in London, in order that a thorough investigation of the composition and real value of these products might be made. The ostentation with which the Chloralum Company commenced, and still carries on, its operations, points either to the especial excellence of the disinfectants recommended, or to a great mistake. The suspicion against the Chloralum Company in this last respect was augmented by many external appearances which accompanied the undertaking. Those newspapers and journals of Ger-

many, which enjoy the greatest circulation, have become the debating forum of the Chloralum Company, so that it seems to be high time that an impartial judge, such as the Central Chemical Institution, founded, as it is, under the auspices of the State, should pronounce unreserved judgment on the Chloralum Industry and its products.

The Chloralum Company recommends—1. Chloralum as the safest disinfectant, as free from smell, and not poisonous; and as adapted for the disinfection of urinals and drains, stables, slaughterhouses, street kennels, and horse dung, for internal and external use in affections of the throat, diphtheria, scarlet fever, small-pox, &c.

As Prof. Fleck states in the 2d, 1871, No. 4, the liquid contents of a clean labelled vessel weighing 637·9, half a litre in volume, and 15 sgr. (1s. 6d.) in price, were used for the chemical investigation. This fluid contains:

82·32	per cent.	water.
0·15	"	chloride of lead.
0·10	"	chloride of copper.
13·90	"	chloride of aluminium.
0·42	"	chloride of iron.
3·11	"	chloride of calcium with gypsum.
100·00	"	

2. Chloralum powder is recommended as an absorbent of organic impurities, as an antiseptic and astringent when combined with wheaten flour, and as a disinfectant for railway carriages, ships, privies, stables, drains, &c.

A tin canister, also very handsomely labelled, containing a white powder of 370 gr. in weight, and 5 sgr. (6d.) in price, was taken to experiment upon. It contained—

0·72	per cent.	chloride of arsenic.
0·55	"	chloride of lead.
0·37	"	chloride of copper.
52·43	"	chloride of aluminium.
1·55	"	chloride of iron.
11·51	"	chloride of calcium.
0·72	"	gypsum.
32·15	"	alumina and silicious earth.
100·00		

3. Chloralum wool and wadding recommended as a styptic and antiseptic for fresh or suppurating wounds and cancerous tumors, also as a disinfectant for coffins and corpses. A neatly labelled bag, of waterproof material, containing 352 gr. of dried wadding, which had been soaked in 173 g. solid chloralum, or 9.80 g. fluid chloralum, price 20 sgr. (2s.) was taken for experimenting upon.

These analytical results leave no doubt as to the nature and the mode of making the preparations of chloralum, and as to their real value.

The manufacture is as follows: An alumina containing lime (limy clay) and a small proportion of iron is steeped in ordinary strong muriatic acid, and dissolved as far as possible. The concentrated fluid, cleared from the alumina that remains undissolved, is drawn off and sold in bottles as *Chloralum* (the name is to be ascribed to its containing chloride of aluminium). The sediment remaining is evaporated, together with the fluid remaining in it, and then dried; this yields the *Chloralum powder*. Cotton or wadding is dipped into the chloralum itself, saturated with it, pressed out, dried, and becomes *Chloralum wool and wadding*.

The arsenic, lead and copper contained in the preparations are to be ascribed to the impurity of the solvent employed, muriatic acid, and to the apparatus in which the alumina is dissolved.

The real value of the contents of a bottle of chloralum, which is sold at 15 sgr. (1s. 6d.), is not to be computed as above 2 sgr. (rather more than two pence). The value of the chloralum powder, which is sold in tin canisters at 5 sgr. (6d.), cannot be placed higher than 1 sgr (rather more than 1 d.), seeing that it is but dried sediment. The chloralum wadding, which is sold for 20 sgr. (2s.) is only worth  $\frac{1}{2}$  sgr. (rather more than a half-penny), at the utmost. A solution of 10 g. of sulphate of alumina in 1 lb. of spring water would be a perfect substitute for the above preparations, all the component parts of which, excepting the chloride of aluminium, are to be regarded as impurities or poisons, and this solution would not exceed 1 sgr. in value (rather more than one penny).

To test the value of chloralum as a disinfectant similar quantities of sewage were treated with chloride of lime, alum, green vitriol, chloralum, quicklime and chloride of magnesium, and the clarified solution was tested for its contents of organic impurities (putridity), by means of an alkaline solution of silver. The effective value of

this disinfectant and purifier may be gathered from the following figures:

Chloride of lime.	Disinfectant.	100.0	per ct.	organic matter
Quicklime.	"	84.6	"	"
Alum.	"	80.4	"	"
Green vitriol.	"	76.7	"	"
Chloralum.	"	74.0	"	"
Chloride of magnesium.	"	57.4	"	"

Thus the disinfecting and purifying powers of chloralum stand below those of alum, or sulphate of alumina and copperas (protosulphate of iron), which further recommend themselves by their much greater cheapness.

To sum up the argument concerning the value and composition of the preparation of chloralum: 1. The preparations of chloralum have nothing in common with the similarly sounding chloral hydrate, and are, in point of fact, mixtures of chloride of aluminium. 2. The preparations of chloralum contain chlorine combinations of lead, copper and arsenic, which renders their employment not free from danger, and which would render their employment as a medicine or as an astringent for open or suppurating wounds dangerous. 3. The price of the preparations of chloralum bears no relation either to their nature or their effect. Considering that the liquid chloralum yields a clear profit of at least 700 per cent., and the wadding 400 per cent., the limits of honest trading may be considered as overstepped. 4. The result of these experiments is that chloralum and the preparations made from the same must be classed amongst the worthless arcana, and in the interest of the public health, as well as in the material interests of the public, a most decided warning must be given against the purchase of the same.—*Chemical Review, Lond., March, 1872, from Industrie Zeitung.*

#### ANALYSIS OF COMMERCIAL SAMPLES OF IODINE.

By PROF. J. A. WANKLYN.

Owing to the high price of iodine and its numerous applications in the chemical arts, its analysis is very important, and at the same time frequently very difficult.

The process is to dissolve a known weight of the sample in a solution of sulphurous acid, and to precipitate the iodine by means of a

solution of the nitrate of silver in presence of an excess of ammonia to keep chloride of silver from being thrown down. All this is exceedingly simple in theory, but it requires a number of minute precautions for its successful execution.

1. *Weighing.*—Iodine cannot be weighed in an open capsule, since it evaporates so rapidly that the loss of weight would be appreciable. A quantity is therefore placed in a small tube closed at one end and capable of being stoppered with a cork at the other. This is then carefully weighed. The tube is then rapidly opened, and a portion of the contents shaken into the solution of sulphurous acid. The cork is then quickly re-inserted and the tube re-weighed. The difference between the first and second weighing shows the quantity of the sample actually taken for analysis.

2. *Determination.*—Prepare beforehand a large glass capable of holding a litre. Pour into it 40 cubic centimetres of a solution of sulphurous acid, concentrated and recently prepared. When the iodine has been thrown in, it is stirred with a glass rod till entirely dissolved. Should there remain an appreciable residue of insoluble matter, it becomes needful to filter the solution. This is performed by means of a funnel fitting into a flat-bottomed phial. The funnel should be covered with a plate of glass during this process, which, however, is not generally necessary. Pour into the glass at least half a litre of boiling distilled water. Then add ammonia in excess, and lastly a solution of the nitrate of silver. Iodide of silver is formed, and falls down as a yellowish precipitate, whilst chloride of silver remains in solution. The precipitate, on stirring, collects at the bottom of the glass when the liquid is hot enough. The beaker is then covered over with a plate of glass and set aside for half an hour. The precipitate is then washed by decantation, with abundance of hot water, the liquid being allowed to pass through a small filter of the best Swedish paper, without folds. It is then thrown upon the filter, and collected as far as possible at the bottom. When the precipitate is perfectly washed, *i. e.*, when a drop of the liquid, on being tested with hydrochloric acid, is found to contain no silver, the filter is taken out of the funnel and carefully dried at 110° C. Before weighing it is necessary to fuse the precipitate, but it is also necessary to avoid heating it in contact with the carbon of the filter, which might reduce an appreciable quantity of silver. When the filter, therefore, is dry, it is laid on a sheet of glazed paper, the precipitate of iodide of silver

is detached with a small platinum spatula, and the paper carefully scraped. Still a little iodide of silver remains on the lower part of the filter. This portion is cut out with scissors, and ignited in a small porcelain capsule of about 12 millimetres diameter, the weight of which must previously be carefully determined. When the filter is burnt and the ash is perfectly white, the iodide of silver is thrown into the capsule and heated till it begins to fuse. It is then cooled and weighed. The excess of weight gives the iodide of silver, of which 54 per cent. is iodine.

*Determination of Chlorine.*—The mother liquor, decanted from the iodide of silver, contains all the chlorine held in solution by the ammonia. It is mixed with pure nitric acid in excess, filtered and weighed in the usual manner.

*Ash.*—Weigh out about five grammes of the sample of iodine by means of the tube, as described above. Put it in a small porcelain capsule and volatilize it by exposure to a moderate heat. The residue is then weighed. It is generally very small, and consists of silica, alumina and traces of alkaline chlorides.

*Moisture.*—This may amount to 20 per cent., and even upwards. It is generally determined as difference, as the moisture cannot be driven off by heat without at the same time volatilizing the iodine also. The following method may be adopted, which, though not absolutely accurate, is useful as a check. Weigh out 1 gramme of the iodine, and put it in a glass tube of narrow bore, graduated to tenths of cubic centimetres. Pour into the tube 20 cubic centimetres of the bisulphide of carbon, which will of course occupy 200 of the divisions. Shake the tube until all the iodine is dissolved, keeping the aperture closed with the finger. Then let it stand two or three hours, well corked. The water present in the sample separates out and floats above the bisulphide of carbon as a slightly yellow liquid. If it occupies the space between two divisions of the tube it is 1-10 of a cubic centimetre in bulk, and weighs consequently 1 decigramme. The iodine therefore in this case, if exactly 1 gramme was operated upon, contains 10 per cent. of water. A fair average sample of commercial iodine contains about :—

Iodine,	.	.	.	.	.	.	88.61
Chlorine,	.	.	.	.	.	.	0.52
Ash,	.	.	.	.	.	.	0.72
Water,	.	.	.	.	.	.	10.15
							<hr/> 100.00

An inferior sample, on the other hand, may contain:—

Iodine,	76.21
Chlorine, . . . . .	0.88
Ash . . . . .	1.11
Water, . . . . .	21.80
	<hr/>
	100.00

—*American Chemist*, April, 1872, from *Mech. Mag.*

# PREPARATION OF A VERY ACTIVE CANTHARIDAL PLASTER.

BY PROFESSOR DR. G. DRAGENDORFF.

Apothecaries frequently complain that some cantharides do not furnish an active blistering plaster; that the same furnish, even when treated with acetic ether, an extract so poor in cantharidin, that with its aid no good Drouott's blistering tissue can be produced. In most cases the opinion is expressed that the flies contain too small a percentage of cantharidin. My experience teaches me to discredit the latter opinion. It is possible to obtain good preparations even from such apparently poor cantharides, it being only necessary to thoroughly extract the cantharidin they contain.

A few observations show how poorly this is commonly accomplished. According to my experience the amount of cantharidin in Spanish flies varies from 0.27 to 0.5 per cent. The coating of a vesicating tissue 20 c. m. long and twelve wide requires about 25 grm. plaster substance, containing usually about 6 grm. powdered Spanish flies, furnishing at least 0.016 cantharidin. 0.00002 grm. cantharidin suffice for a blistering surface of a square centimetre, or 0.0048 grm. for 240 square centimetres, or less than one-third of the smallest quantity that may be considered present in the plaster. Mechanical causes may partly be found to be the ones that prevent a thorough action of the plaster. A plaster of poor adhesiveness, not being in close contact with the epidermis, does not act because that close contact is wanting, which is necessary for the absorption of the cantharidin. It is also a mistake of several pharmacopœias to permit the use of coarsely-powdered cantharides, the quantity of cantharidin in which is not uniformly distributed in the plaster, even if the powder is heated for a long time with the oil.

Other causes, unnoticed heretofore, also weigh heavily in this direction. The cantharidin is present in the Spanish flies in several

different combinations, in which it is firmly held. This we may see, as mentioned already in my "Contributions to Toxicological Chemistry," in the difficult behavior of flies towards various solvents. Cantharides with about 0.3 per cent. of cantharidin yield to water, even after repeated boiling with fresh portions of the same, only about half of their cantharidin, while the remainder is only yielded to potassa lye. In the same manner, alcohol, chloroform, and ether, dissolve only 30 per cent. of the blistering substance. If all the cantharidin is to be extracted, bases like potassa or soda must be employed, which form easily soluble salts with the cantharidin. Together with Masing, I demonstrated years ago that the salts thus formed are energetic blistering agents. During the past two years, reference has occasionally been made to our observation, especially by Delpech and Guichard, recommending the cantharidates of soda and potassa as vesicants.

Without alluding to this further, I would say that by the aid of soda or potassa the entire amount of cantharidin contained in the flies may be rendered active. The finely-powdered flies are mixed to a paste with diluted alkaline lye of about 1.1 sp. gr., heated in water bath for 25 to 30 minutes, when sufficient muriatic acid is added, to have a trifling surplus of the same, and the whole mass is dried rapidly in the water-bath. The residue, which we may call "prepared cantharides," is powdered anew and employed for the preparation of the plaster, or for the extract with acetic ether for use upon tissue. The small quantity of potassium or sodium chloride present, is in no case injurious. The cantharidin is now present in the mixture in a free state. In a drug store in this city, where my proposition has been followed, no complaints have been made about the preparation.

Even for the preparation of the pure catharidin, the above mentioned process is worthy of attention. As I mentioned before, ether, alcohol, etc., dissolve from the cantharides, not "prepared," only a fraction of the cantharidin present.—*Pharmacist and Chemical Record*, April, 1872.

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## Varieties.

*Cundurango by its Friends.*—Through the kindness of Dr. John S. Perkins, of this city, we have been put in possession of some very interesting letters from persons whose names appear on Bliss, Keene & Co's certificates. The letters (five in number) do not seem to be very commendatory of the drug. Two of them from medical men deny ever giving any testimonials of its virtue

whatever. Vice-President Colfax says he always declines to sign certificates of any kind, but says that a *private* letter of his once got into print and was extensively published. The remaining two from persons outside of the profession do not give evidence of any remarkable cures. In fact both state that in the cases observed by them *no cure has been effected*, but they *think* some benefit has been derived from the use of Cundurango. The proprietors of Cundurango seem to have followed in the steps of all quack medicine venders, and secured certificates no matter by what means. One of the physicians alluded to, Dr. Fitch, of Chicago, says: "I have never authorized the use of my name in the connection you speak of (Cundurango), and from this fact alone I am satisfied that the whole thing is a money making scheme and I may say a humbug."—*Buffalo Medical and Surgical Journal*, April, 1872.

*New Use for Paraffin*—Dr. Vohl announces that, mixed with benzole or Canada balsam, paraffin affords a much superior glazing for frescoes than soluble glass. By covering the interior of wine casks with a film of pure white paraffin poured in melted, he has effectually prevented the spoiling of wine, or its evaporation through the wood.—*Journal Franklin Institute*, Feb., 1872.

*Value of Salt*.—This substance is remarkable as constituting the only mineral eaten by man. Not only does it afford an indispensable and wholesome condiment for our tables, but it forms an essential constituent of the blood, and supplies to the human system the loss sustained by saline secretions. Its antiseptic properties are invaluable; but although it preserves, it ultimately changes and deteriorates the quality of the food to which it is applied, rendering the same innutritious and indigestible; for salt, notwithstanding its being a strong stimulant to the animal fibre, is not convertible into nutriment. This is the cause why sailors who subsist long upon salted provisions are subject to the sea-scurvy. Its medicinal qualities are also remarkable. While all other saline preparations tend to cool, this but heats the body, and engenders thirst. Some years ago a medical man wrote a *brochure* in which he condemned the use of salt, attributing to it all the diseases to which flesh is heir. The poor fellow eventually committed suicide. Only lately a book has appeared in which the writer, who is a physician, recommends salt as a sure antidote to the contagion of small-pox. Doctors will of course disagree; but as *Variola* is acknowledged to arise from a diseased or poisoned condition of the blood, the due use of salt may possibly form a safe and effective specific. Salt is not only an agreeable condiment, but also an indispensable requisite. When moderately used it acts as a gentle stimulant to the stomach, and gives a piquancy and relish to our food. In Africa the high caste children suck rock-salt as if it were sugar, although the poorer classes of natives cannot so indulge their palates. Hence the expression in vogue among them, "He eats salt with his victuals," signifying that the person alluded to is an opulent man. In those countries where mineral salt is not procurable, and where the inhabitants are far removed from the sea, a kind of saline powder is prepared from certain vegetable products to serve in its stead. Indeed, so highly is salt valued in some places—such as Prester John's country—that from its very scarcity it is employed as a substitute for money.—*Good Health*, February, 1872, from *Food Journal*

**Meat Extracts.**—Dr. P. Müller, in an essay on meat extracts, considers that they are neither directly nor indirectly food, for they do not contain albuminoid matter, neither do the nitrogenous principles which they contain arrest dissimilation, that is, they do not prevent the waste of the organic matter which composes the body. In small doses, these extracts are useful by the stimulant action of the potassa salts, which promote digestion and circulation; in strong doses—too large quantity at once—these substances may have a very injurious effect. Medical men should bear in mind that, if given alone, these extracts (and the same applies to beef tea) are no nutriment, and only tend to keep the convalescents weak and not only ill fed, but not at all fed.—*Good Health*, April, 1872.

**Extemporaneous Ink.**—The following recipe will give black ink of good color and permanency:—Take of tannic and gallic acids each 20 grains, dissolve in 2 fluid ounces of water, take also of crystallized sulphate of iron and of the dried sulphate (*sulphas ferri exsiccatum*), of each 15 grains, and dissolve these separately in a similar quantity of water (best distilled); mix the two solutions and add of mucilage (*mucilago gummi arabici*)  $2\frac{1}{2}$  fluid drachms, of oil of cloves 2 drops. Although this ink is by no means cheap, it is preferable to every other, and is a very fine black and quite permanent.—*Chem. News*, Jan. 26, 1872.

**Effect of Severe Cold upon Cast-iron.**—H. Cock.—The author relates that the cast-iron framework of a 12-horse horizontal high pressure steam engine, employed at the printing-works of M.M. Renou and Maulde (Paris), after having been exposed for some hours to a temperature of  $-15^{\circ}$  during the night of December 8 to 9 last, suddenly snapped to pieces in three different places when the engine driver attempted to start the engine very cautiously and at a slow speed on the morning of December 9 last.—*Chemical News*, Jan. 26, 1872, from *Les Mondes*, Jan. 11, 1872.

**Decomposition of the Soluble Sulphurets by Water.**—Dr. H. Kolbe.—The eminent savant first refers at length to the extensive thermo chemical researches of Thomsen, and then describes a series of researches made with the view of elucidating, under varying conditions, the behavior of the soluble sulphurets with water. The chief result of the author's researches is that when the soluble sulphurets become dissolved in water they undergo a partial decomposition, due to the fact that the metals of these sulphurets have an equally strong affinity for the oxygen of the water as for the sulphur, and, as a consequence thereof, these sulphurets (as mono-sulphurets) undergo a partial decomposition into sulphhydrate of the metal and hydrated oxide of the metal when only a small quantity of water is present, but with a large quantity of water this decomposition will proceed further.—*Chem. News*, Jan. 26, 1872, from *Journ. f. Prakt. Chem.*, 1871, No. 19.

**Poisonous Effects of Zinc Utensils.**—The *Union Medical* calls attention to a new source of danger, caused by the substitution of zinc for tin in the manu-

facture of pots and pans by travelling tinmen. Zinc sheet can be had at seventy centimes the kilogramme, while tin costs three or four francs, so that it is often substituted in the making of kitchen utensils. The fraud cannot be detected by the eye, but a little vinegar boiled in the vessel will immediately corrode the surface and, if done in the process of cookery, will give rise to symptoms of poison.—*Med. Press and Circular*. Jan. 10, 1872.

*Preparation of Pure Metallic Silver*.—Dr. Gräber.—The author dissolves the alloy of silver in nitric acid, taking care to use as small a quantity as possible; the solution is then transferred to a large-sized porcelain basin, and gradually neutralized with previously lixiviated chalk free from chlorine. The neutralized liquid is next boiled, and chalk again added to it, while boiling, until the fluid has become colorless (in order to test more accurately, a drop of the liquid is poured on a piece of white filtering paper, and next to that drop is placed one of a solution of ferrocyanide of potassium; as long as the well-known red coloration, copper reaction, hereby ensues, chalk is added). The fluid is next filtered, to separate the carbonate of copper, and the filtrate (a solution of nitrate of silver and nitrate of lime) is again boiled, and either further treated with carbonate of lime or, better still, with carbonate of soda; the bright yellow colored precipitate thereby ensuing, a mixture of carbonate of silver and carbonate of lime, is washed, dried and ignited, leaving a greyish white mass of metallic silver mixed with carbonate of lime; this mixture is treated with dilute hydrochloric acid, washed with distilled water, and then fused along with borax, yielding pure silver. The bright green-colored carbonate of copper can be used as a pigment for painting purposes.—*Chem. News*, March 8, 1872, from *Dingler's Polyt. Journ.*, Jan.

*Observations Bearing upon M. Boussingault's Communication on a Saccharine Substance met with on the Leaves of a Lime Tree*.\*—Dr. P. Harting.—The author first briefly refers to the communication just named, and then relates that some years ago he had an opportunity to observe a similar phenomenon in his garden at Utrecht (Kingdom of the Netherlands); in this instance the author found along with the saccharine excretion a number of insects, *Aphis*, on the tree, and some of these insects were seen quite filled with the saccharine juice, which, on being submitted to chemical analysis, was found to consist essentially of cane sugar. The reading of this paper, wherein the author states that, in his opinion, the secretion of this saccharine juice is due to the punctures made by the insects alluded to in the leaves of the lime tree, gave rise—First, to an observation of M. Boussingault, who says that Dr. Harting's opinion just alluded to is that generally accepted, but did not hold good in the instance referred to by him; he also states that the leaves of lime trees contain a rather large amount of cane sugar. Secondly, Colonel Follié states that the phenomenon alluded to is every year observed on the lime trees planted on the Esplanada at Metz, the abnormal secretion of saccharine matter being so strong that drops of it are continually falling from the trees, which lose their foliage very early in autumn.—*Chem. News*, March 8, 1872, from *Compt. rend.*, Feb. 12.

\* See American Journal of Pharmacy, 1872, p. 211.

*Minutes of the Pharmaceutical Meetings.*

A pharmaceutical meeting was held May 20th, 1872, President in the chair.

An interesting feature of the meeting was the presence of Samuel F. Troth, on the 50th anniversary of his election to membership to the College. On behalf of some of his friends, the Chairman on this occasion presented him with a copy of the last edition of the United States Dispensatory, and Dr. Jos. Thomas' Biographical Dictionary, in two volumes, as a testimonial to his long and untiring devotion to the interests of the College. On the title-page was the following inscription:

1822—1872. Presented to Saml. F. Troth by a number of his fellow-members of the Philadelphia College of Pharmacy, as a testimonial of their esteem and appreciation of the valuable services rendered by him to the institution during the past half century.

Friend Troth exhibited his original certificate of membership, in a good state of preservation, and, in acknowledgement of the gift, stated that he had served the College to the best of his ability for 45 years; during the last five years, from impaired health, he had been obliged to retire from active service.

Mr. Bullock exhibited the result of drying a film of gelatine on a sheet of glass; in contracting it was found to raise a film of the glass with it. Mr. Procter had noticed this in a test-tube with glue, though not on so extended a scale.

Prof. Maisch presented to the College a number of specimens of cundurango, sent through Dr. Ruschenberger, U. S. N., by Dr. J. M. Foltz, Surgeon General U. S. Navy, for the College cabinet. They were collected in the province of Loja, Ecuador, by Passed Assistant Surgeon Joseph G. Ayres, of the Navy, by official direction, and forwarded with a report to the bureau of medicine and surgery in the Navy Department; a description of the several specimens has been prepared and will probably be published. The specimens comprise pieces of stems, fruit, &c., of the following seven varieties: Cundurango de tumbo grande, de Tumbo chico (Bejuco Pachón), de Paloma, de Platano, de cascarrilla, Saragosa and blanco. Prof. Procter raised the question whether cundurango was the same as guaco, which has been sold in European markets as cundurango, and whether any authentic case of cure from the use of this remedy is known. Prof. Maisch stated that he had never seen guaco sold as cundurango in our market, nor had he read of the cure of a case of cancer in any of the medical or pharmaceutical journals, and stated that none of the physicians whose names were mentioned in connection with its successful use when first introduced now claimed anything for it; some publicly declare they had nothing to do with the publication of their names as recommending it. (See page 274.)

Mr. Bullock proposed a vote of thanks to Dr. Foltz for his valuable donation, and the Registrar was directed to forward to him through Dr. Ruschenberger this expression of the meeting.

Mr. Remington spoke of an adulteration of iodine which recently came under his notice. Upon examination this sample was found to contain about 25 per cent. of sawdust. Mr. R. stated that the adulteration was very easily detected by close examination, or by one accustomed to handling the article. It was

suggested by members that the sawdust may have become mixed with the iodine through breakage, the iodine having been packed in it for transportation. The adulterant seems almost the last that would suggest itself, on account of its lightness. The result of further investigation will be interesting to the profession at large.

Prof. Maisch exhibited a fine sample of round cardamom (*Ammomum cardamomum*), very rare in this market.

The Professor also exhibited crabs' eyes, which were enclosed in a small bag in an original package of cantharides. The question arose as to the cause of this, and as crabs' eyes are thought to be about as expensive as cantharides it is doubtful whether this can be called an intentional fraud.

A curious specimen of colchicum was also shown, cut in transverse slices, externally white, internally quite dark in color.

The Professor also exhibited to the College a fine sample of Chinese blistering fly (*Mylabris Cichorii*), said to contain one-third more cantharidin than Spanish fly of European commerce. These flies differ from the *Cantharis Vesicatoria* in some particulars, and are devoid of the peculiar green lustre on the wings. Some discussion ensued as to the principle, cantharidin, and its development in the fly, as being connected with the genital organs of the female fly, and being present only at a certain stage in its life. The Chinese fly is imported into the London market at about half the price of the official fly.

Prof. Procter spoke of *Cantharis atrata*, which is not a *Mylabris*, and which he has had for some time.

This being the last meeting until the autumn, Prof. Maisch mentioned that the British and North British Societies had also held their last pharmaceutical meeting of the season. After pleasant conversation, the meeting adjourned, to meet on the third Tuesday in October.

CLEMMONS PARRISH, Registrar.

### Pharmaceutical Colleges and Associations.

THE MASSACHUSETTS COLLEGE OF PHARMACY held the commencement of its Sixth Session, at Horticultural Hall, May 22d, when the following gentlemen received the degree of Graduate in Pharmacy: Edward C. Boyden (*Assays of Ten Samples of Syrup of Iodide of Iron*), John D. Knowlton (*Black Pepper, with Assays of Commercial Samples*), Edgar L. Patch (*Pill and Powder Making*), Charles E. Tappan (*Examination of Commercial Ginger and its Powder*), James T. Wright (*Cream of Tartar and its Adulterations*), Nahum Washburn, Jr. (*Assays of Ten Samples of Commercial Compound Tincture of Cinchona*). The valedictory address was delivered by Professor James F. Babcock.

THE NEW YORK COLLEGE OF PHARMACY has instituted a course in botany, under the superintendence of Mr. P. V. Le Roy, Secretary of the Torrey Botanical Club. The excursions take place every two weeks.

Wm. Manlius Smith, Ph. D., has been selected to fill the chair of Practical Pharmacy, made vacant by the resignation of Dr. E. R. Squibb.

MARYLAND COLLEGE OF PHARMACY.—At the meeting held May 9th the Committee on Unofficial Formulas was ordered to report at the next monthly meeting. Great anxiety was expressed for the publication of this report, the former edition (now out of print) having served an excellent purpose in arranging and rendering uniform the numerous local formulas used in Baltimore.

Mr. Wm. S. Thompson read an essay on the practice of pharmacy fifty years ago, comparing it with that of the present day, and giving many practical hints and numerous suggestions. The paper will come up for discussion at the next meeting.

Mr. J. F. Hancock exhibited various medicated waters, among them the distilled waters of peach leaves, orange peel, mint, &c. He contended that distilled medicated waters are generally superior to those made from the volatile oils with magnesia; if prepared with the oils these should be agitated with warm distilled water in preference to using magnesia. Thus made, medicated waters possess a fine flavor, are transparent and quite suitable for solvents. The subject elicited an animated discussion.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—The last pharmaceutical meeting of the season was held May 1st, the President in the chair. Among the donations made to the library and museum were specimens of *Ki temboga* or copper-tree bark, from *Memecylon grandis*, *Melastomaceæ*, a native of Java, possessing astringent properties and, according to Dr. De Vrij, probably useful in tanning; the popular name is derived from the copper color of the bark. Also the essential oil of *Gaultheria punctata*,\* of *Chavica* (*Piper*) *belle*, and of *Eucalyptus globulus*, the oils of the pericarp and of the kernel of the cashew nut, &c.

Dr. Tilden stated that he had found the specimen of so-called crystallized bisulphite of magnesia, about which a paper had been read by Mr. Archbold, to be the ordinary sulphite containing six molecules of water of crystallization. He thought it highly improbable that any such compound could be produced in the solid form.

Mr. Williams stated that bisulphite of lime, being soluble in water, may be used as a test to determine whether salts are sulphites or bisulphites. A solution of chloride of calcium is added to the solution of the bisulphite to be tested; if a precipitate occurs (which may be sulphite, sulphate or carbonate), the whole is thrown on a filter, and the filtrate precipitated by lime water, which neutralizes the excess of sulphurous acid, and from the amount of sulphite thus produced, the percentage of bisulphite originally present in the sample can be easily calculated.

Mr. Greenish then read a paper entitled "Pharmacy in Austria." An animated discussion followed the reading of this sketch, in which the present condition and future prospects of German and Austrian pharmacy were compared with those of Great Britain.

THE NORTH BRITISH BRANCH OF THE PHARMACEUTICAL SOCIETY held its fifth

\*See Amer. Journal of Pharmacy, 1872, p. 72.

and last scientific meeting for the season on Thursday, April 18th, Mr. Baildon, President, in the chair.

Mr. John Gibson read a paper, illustrated by specimens and drawings, on "The Natural History and Commerce of Sponges."

Messrs. McFarlane and Co., of Edinburgh, presented to the museum several specimens of various kinds of sponges, adhering to pieces of rock, which had recently been procured from Smyrna.

The President then delivered his valedictory address.

At the annual meeting held April 19th Mr. H. C. Baildon was elected President, and Mr. Wm. Gilmour Vice-President. After the election of the Council and other officers, Mr. Mackay was requested to continue to act as honorary Secretary. The meeting then adjourned.

PHARMACEUTICAL SOCIETY OF PARIS.—At the meeting held March 6th, Mr. Stan. Martin presiding, Mr. Boudet reported on the transactions of the Académie de Médecine. The subject of tannate of quinia occasioned some discussion. Mr. Roucher regards it as possessing rather less activity than the sulphate, but to possess certain advantages in special cases. Mr. Regnault stated that by precipitating acetate of quinia with tannin, a turbid liquid is obtained which will pass through the filters, so that it is impossible to wash the newly formed compound, which is very soluble in acetic acid, and which separates completely on the addition of a little sulphuric acid or even of sulphate of soda. The tannate of quinia, freed from sulphuric acid, is nearly insoluble in water, but soluble in alcohol. The speaker also believes that the morphia in wine of opium is not precipitated by the little tannin contained in the cinnamon and cloves, as believed by Mr. Delieux de Savignac, for which reason he had proposed to substitute these aromatics by sugar, also to replace opium by its extract. (See, also, below, the account of the meeting of the Pharmaceutical Society of Antwerp).

Mr. Limousin read a paper on sulphovinate of soda, describing the mode of preparing it, and reporting on some advantages it possesses over other saline purgatives, among which may be mentioned its more pleasant and cooling taste, and that it does not produce subsequent constipation, nor calculi in the bladder, like magnesia salts.

A paper, by Mr. Cauvet, on the distinctive characters of French and Asiatic rhubarbs, refers mainly to the well known differences in the direction of the red medullary rays, and the greater prominence of the brown cambium zone in the former.

Mr. E. Bourgoin proposes to test oil of bitter almonds with an equal weight of caustic potassa; the pure oil changes merely to a yellowish color; in the presence of nitro-benzole a yellowish red color is produced, which rapidly changes to green; on the addition of water, the mixture separates into two layers, the lower of which is yellow, the upper one green changing to red in the course of a day.\*

At the meeting held April 3d, Mr. Boudet reported on the essay by Mr. Le-fort on the distribution of atropia in belladonna.† Some discussion took place

\* See American Journal of Pharmacy, 1857, p. 544.

† See page 258 of this Journal.

on the proposed legislation relative to medical and pharmaceutical legislation.

Mr. Roucher stated that, under certain circumstances, Japan wax has two fusing points, and that beeswax does not show this phenomenon. He likewise exhibited the results of his investigations on digitaline and digitine.

PHARMACEUTICAL SOCIETY OF ANTWERP.—At the meeting held March 10th, the President, Mr. De Bruyne, in the chair, and Mr. Van Pelt, Secretary, an essay, by Mr. Eg. Daenen, on the preparation of Sydenham's Laudanum, was read, in which the author stated that the precipitate occurring in this preparation contains morphia and is caused by the tannin of the cinnamon. Chinese cinnamon and cassia lignea contain a larger proportion of tannin and yield a more voluminous precipitate than Ceylon cinnamon. By substituting the cinnamon and the cloves by a corresponding quantity of their volatile oils, a laudanum is obtained possessing all the essential properties of this medicine without the inconveniences. The author likewise advocates the employment of an opium or its extract, of a definite morphia strength.

A paper by Messrs. H. Vande Velde and Edm. Van Melckebeke was read, treating of the different processes that have been proposed for making Blaud's Pills, and suggesting the following formula: 180 grm. sulphate of iron and 110 grm. bicarbonate of soda are powdered, and added to a heated mixture of 15 grm. water and 5 grm. glycerin. When the disengagement of carbonic acid has ceased, remove from the fire, add 35 grm. honey, and incorporate afterwards 25 grm. gum Arabic and 2 grm. tragacanth, previously mixed; make into pills weighing 25 centigram. each.\*

THE AUSTRIAN APOTHECARIES' ASSOCIATION contemplates publishing a handbook of pharmaceutical chemistry, the author of which is Dr. Godeffroy, the chemist of the Association. The work, which is completed in manuscript, aims to treat exhaustively of all chemicals of importance in pharmacy, their mode of preparation, purification and examination.

## Editorial Department.

OUR JOURNAL appears this month for the fourth time with the edges trimmed—an innovation which it was proposed to have commenced with the beginning of the volume. During these four months we have had many approving comments on the course adopted, while but three complaints have been made concerning it, and all three based upon the supposition that so much had been clipped off as to leave less margin in the bound volumes than heretofore. We take occasion to refer those of our readers who may have a similar impression, to page 42 of last year's volume, where information was given that the printed matter of each page has been *widened* and *lengthened*, while the size of the paper remaining as before, less margin is left in the fourth series of our Journal, which is now trimmed as *close to the edges* as possible.

\*For other formulas for the same pills, see American Journal of Pharmacy, 1871, pages 307, 373, 471.

**PHARMACEUTICAL LEGISLATION.**—The Baltimore Pharmacy Act, approved March 23, 1870, has been repealed by the Legislature of Maryland, and in its place another law has been enacted and approved April 1, 1872, to prevent incompetent persons from conducting business as pharmacists or vending, at retail, drugs, medicines and chemicals for medicinal use in the city of Baltimore. The new law is an improvement on the old one.

On the 22d of May, Governor Hoffman signed the new Pharmacy law applying to the city of New York, and the famous Irving bill, with its costly commissioners, is now dead and buried. According to the new law the members of the College of Pharmacy of the city of New York elect the Board of Pharmacy, which is to be composed of five competent pharmacists, three of whom shall be graduates in medicine and two graduates in pharmacy. It is probable that the College has among its members more than the sufficient number of graduates in medicine, qualified according to this law, to act as examiners, so that it can establish the standard of acquirements, and hereafter becomes responsible for the qualification of the pharmacists in the city of New York.

Thus we have, beside the State of Rhode Island, now four large cities of the United States for which pharmaceutical laws have been enacted, namely, New York, Philadelphia, Baltimore and San Francisco. Other cities and States will probably soon follow.

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**THE PHILADELPHIA PHARMACEUTICAL EXAMINING BOARD** has organized by the election of Mr. James N. Marks as President and James T. Shinn as Secretary. The office of the Board is at 723 Arch street, where the registration of those engaged in the business was commenced on May 20th. We understand that the Board also receives now applications by clerks for examination and certificates of competency, the examination to commence towards the latter part of June, after the registration of the pharmacists in business has been accomplished.

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**THE CHICAGO COLLEGE FUND.**—The Committee in Great Britain having the matter in charge announced that the list of contributors would be closed on the 30th of April last. Up to April 12th the cash received amounted to £450, and the value of the books and specimens to at least £100. It was proposed to expend about one-half the cash in the purchase of other useful English books on pharmacy, chemistry, materia medica and botany, and the balance in apparatus and specimens for the illustration of lectures. A collection of various French works has been made through Dr. J. Léon Soubeiran, and will be sent with the donation from Great Britain.

The North German Apothecaries' Society has shipped to the Chicago College about 250 volumes of the following scientific journals: *Archiv der Pharmacie*, *Buchner's Repertorium der Pharmacie*, *Buchner's Neues Repertorium der Pharmacie*, *Jahrbuch für Praktische Pharmacie* and *Journal für praktische Chemie*.

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**A VICTIM OF THE DIPLOMA SWINDLE.**—We copy the following from the *Pharmaceutical Journal and Transactions* of May 11th, which shows that the revok-

ing of the charters of the two bogus doctor factories by the Pennsylvania Legislature is hailed in Europe with the same satisfaction as in this country.

"On Tuesday, May 7th, an appeal was argued in the Court of Exchequer on behalf of Thomas Andrews, of Shrewsbury, against a conviction of the magistrates of that town for improperly using the letters M. D. after his name in accounts rendered. The appellant produced a diploma of the University of Philadelphia, United States, of the year 1870, but did not appear even to have visited the place or been examined before a qualified tribunal.

"Their Lordships were all of the opinion that the conviction should be affirmed, and dismissed the appeal with costs.

"Baron Martin expressed his satisfaction that measures were being taken by the Legislatures in America to suppress this issue of spurious degrees by the University of Philadelphia."

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PROTECTION AGAINST ACCIDENTAL POISONING.—The College of Physicians of Philadelphia adopted the subjoined preamble and resolution, and have communicated the same to the American Medical Association, lately in session in this city, by which body they have likewise been adopted. They have also been communicated to several pharmaceutical societies with the request to consider them :

"Whereas cases of accidental poisoning and of the internal administration of medicines intended only for external use are so frequent ; and—

"Whereas every possible safeguard should be employed to prevent such accidents ; therefore

"Resolved, That it is recommended to all druggists to place all external remedies in bottles not only colored, so as to appeal to the eye, but also rough upon one side, so that by the sense of touch no mistake shall be possible, even in the dark ; and that all bottles containing poisons should not only be labelled 'poison,' but also with another label indicating the most efficient and convenient antidote."

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THE EXHIBITION AT THE TWENTY-THIRD ANNUAL MEETING OF THE AMERICAN MEDICAL ASSOCIATION has been quite successful and surpassed the expectation of most members. Five large rooms in the hall of the College of Physicians, of Philadelphia, were filled with philosophical, obstetrical and surgical instruments and apparatus, anatomical and pathological specimens and models, books, medicinal plants, crude drugs, chemical and pharmaceutical preparations and apparatus. The Committee on exhibition and the subcommittees deserve great credit for their exertions.

Quack medicines were, of course, excluded ; but in order to exclude also the numerous elixirs and similar preparations of an order closely related to quackery, a resolution had been adopted prohibiting the exhibition of all unofficial preparations, unless made by a formula published in some scientific journal, or by a process fully made known.

If these exhibitions, in connection with the annual meetings of the American Medical Association, are continued, we expect that the members will feel the interest increasing, and derive a benefit similar to that experienced by the members of the American Pharmaceutical Association from the exhibitions at their annual meetings.

## REVIEWS AND BIBLIOGRAPHICAL NOTICES.

*Tables of Mortality*, forming part of the Vital Statistics of the United States, Ninth Census, 1870. Washington, D. C., 1872. 4to. 423 pages.

We have been favored by Mr. Francis A. Walker, Superintendent of the Census Office, Department of the Interior, with a copy of the advance sheets of the above-named tables, which are nine in number. These returns of mortality, made under the act of 1850, are not assumed to include the entire body of deaths occurring during the census year; but the tables are valuable, distributing as they do nearly half a million (492,263) of deaths, according to disease, age, sex, nativity, race, color and occupation, as well as the month in which the deaths occurred. A discussion of the bearings of this subject is promised for the final publication, and will doubtless be extremely interesting to the statistician. We now remark that there has been reported for the year 1870 only one death for 7833 inhabitants (total number of inhabitants, 38,555,983). Of the number reported 260,673 were males, and 231,520 were females. Of 24 deaths of males and of 247 deaths of females, one child under 5 years was carried off. The deaths by poison numbered 2351 males (1410 by alcohol, 31 by lead, and 910 by other poisons not specified) and 599 females (249 by alcohol, 2 by lead, and 349 by other poisons). The poisons "not specified" must include suicides, murders, fatal mistakes and accidents by poison. Their proportion to the entire number of reported deaths of the respective sexes was, therefore, 0.349 per ct. among the males and 0.1502 among the females.

We cannot ascertain the mortality of apothecaries and druggists, since table viii recognizes only the following occupations: agriculturists, clergymen, laborers, lawyers, merchants and clerks, mill and factory operatives, all other mechanics, physicians and teachers.

*The Physiological and Therapeutical Action of the Bromide of Potassium and Bromide of Ammonium*. In two parts. By Edward H. Clarke, M. D., and Robert Amory, M. D. Boston: James Campbell. 1872. 12mo, 178 pages. Price, \$1.50.

The work consists of two monographs, supplementary to each other, Part I treating of the "Therapeutical Action of Bromide of Potassium and its Kindred Salts," while Part II has the "Physiological Action of Bromides of Potassium and Ammonium" for its subject. The latter, written by Dr. Amory and published in the Transactions of the Massachusetts Medical Society a few years ago, was received with such favor that another edition became necessary. The propositions of this essay are stated as follows:

A. Bromide of potassium is absorbed readily by any portion of the healthy mucous membrane with which it is placed in contact.

B. It is largely and mainly eliminated with the urine; during the first day the largest portion passes out of the system, less during the second day, and so on until there is none left in the system.

C. The skin assists in the elimination of this drug from the system on the second as well as on the first day.

D. The loss of reflex action is due to the diminution of blood in the periphery of the nerves, and also of the central nervous system, this last occurring after the first.

E. The action of bromide of potassium on the nervous system may be explained by its action on the capillary, arterial or central circulation.

The experiments from which these propositions have been deduced are briefly but clearly related.

Part I, written by Professor Clarke, occupies 103 pages, the greater part of the volume before us. The subject is discussed under the following headings: Absorption, Elimination, Action while in the System; The Continued Dose; Action of the Toxic Dose; Special Applications of the Continued Dose; Epilepsy; Hysteria; Antagonism of Bromide of Potassium and Strychnia; which chapter is followed by a brief account of the other alkaline bromides.

The medical literature in both essays has been extensively consulted, critically examined, and carefully compared with the experiments and observations of the authors; thus many interesting facts have been established which must prove very valuable to the medical practitioner.

The chemistry, as a general rule, is correctly given; in a few instances only have we observed statements which can scarcely be considered as sufficiently exact. Thus, on page 112, the following passage occurs: "The bromide of sodium closely resembles in *appearance, taste, solubility* and physiological action, the bromide of potassium, bromide of ammonium and bromide of lithium." The italicized words are the portion to which we take exception as regards exactness. On page 123 it is stated that "the stronger acids with difficulty liberate the *bromine* at an ordinary temperature." Bromine is liberated in the form of *hydrobromic acid*.

A physical law which is so frequently disregarded by physicians in ordering medicines shares here no better fate on p. 101. One ounce bromide of potassium was dissolved in three (fluid?) ounces of water, and half an (fluid?) ounce given as a dose; the solution will measure over  $3\frac{1}{2}$  fluidounces, and the dose contain about 65 grains of the salt, whereas the author regards the salt as occupying no space, and states the dose as eighty grains, a difference of about 23 per ct. over the correct quantity.

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*First Annual Report of the Alumni Association of the College of Pharmacy of the City of New York.* Containing, also, the Valedictory Address delivered by Professor C. F. Chandler, and the Address of the President of the Society, D. C. Robbins, Esq. New York: Croker & Telfer, Printers. 1872. 8vo, 39 pages.

The valedictory address of Professor Chandler is an excellent "farewell" to the graduates; it discusses several important questions relating to pharmacists and pays a deserved tribute to the creation in New York of the famous (?) Irving bill, which, happily, is now a thing of the past, in the following passage:

How much could our College do with the money which is now being expended on the Commission of Pharmacy! Last year the pharmacists paid \$11,890, while the city paid \$8000 more, or about \$20,000 in all, to find out whether the apothecaries were competent for their business. This year the 300 still to be examined are expected to pay about \$5000, and the city \$11,000 more, or \$17,000 in all. Nearly \$38,000 in two years to find out whether the apothecaries know their business, but not a cent to instruct them. The College works faithfully in its modest way, with a few hundred dollars a year for its expenses, while the Legislature taxes the apothecaries and the city enough in two years

to provide the College with a permanent building; assesses nearly \$38,000 for what the College will gladly do gratuitously.

The annual address of the President of the Alumni Association likewise possesses a lasting value. It reviews the history of the New York College of Pharmacy as an educational institution, and discusses briefly the past, the present and the future of the pharmaceutical profession in the United States. We extract from it the following statistical information, which we think will be interesting to our readers:

In Prussia, the government considers one apothecary's store to be quite sufficient for 7500 population, while throughout our whole Union the average everywhere is about one to every 2500 souls, a proportion which appears to prevail without much regard to locality or circumstances; thus, with about one million population within the city of New York, we have over 400 apothecaries. In the whole Union, with about forty millions, we have a little less than 13,000 druggists and pharmacists, and we find that the more restricted the range of the pursuit the greater number of persons are engaged in it, in proportion to the population; consequently the rewards within our cities for the pursuit of one of our most responsible professions, requiring extensive education as well as culture and close application, are quite inadequate.

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*Gmelin-Kraut's Handbuch der Chemie. Anorganische Chemie in drei Bänden. Sechste umgearbeitete Auflage. Heidelberg: Carl Winter's Universitäts buchhandlung. 1871.*

We have noticed the appearance and spoke of the merits of this new edition in our January number, and now have upon our table the third and fourth numbers of the third volume, revised by Dr. S. M. Jørgensen, of Copenhagen, which contain the elements thallium, lead and part of iron.

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*Formulas for some Elixirs and Medicated Wines, adopted by the Louisville College of Pharmacy, January 16<sup>th</sup>, 1872. Chicago: J. J. Spalding & Co., Printers. 1872. 8vo, 9 pages.*

These formulas were reported by Professor Diehl at the request of the Committee on Unofficial Formulas of the Louisville College of Pharmacy. Their adoption by the College named is a step in the right direction, calculated to replace by "home made" preparations the semi-nostrums of others. It is to be regretted that there are so many physicians, even in the larger cities, who—unthinkingly—rather rely on the assertions of distant and near manufacturers than upon the experience and knowledge of their accomplished pharmacists, who, honestly and without claiming a proprietaryship, impart their experience, and freely acknowledge that they cannot prepare—what nobody else can do—a bitter wine of iron, or an elixir of quinia containing gr. j to f3j, which do not possess a bitter taste. Under the pretence of "elegant pharmacy," innumerable preparations have been introduced to and are used by the thoughtless and unwary physician. Any measure calculated to correct this abuse must be welcomed by the conscientious pharmacist. Some of the formulas proposed may, perhaps, not be the best that can be devised, but they will furnish pleasant preparations of known definite strength, and as such should be preferred by the conscientious physician to preparations the processes for which are kept secret.

*Transactions of the Twenty-first Anniversary Meeting of the Illinois State Medical Society, held at Peoria May 16th, 1871.* Chicago: Fergus Printing Co. 1872.

The original edition was burned during the Chicago fire. The present contains only such reports of which copies had been preserved by their authors.

*Forty-sixth Annual Report of the Surgeons of the Massachusetts Charitable Eye and Ear Infirmary.* February, 1872. Boston: James Campbell, Publisher. 8vo, 28 pages.

The pamphlet contains, besides the statistical accounts usually found in such publications, also an essay, by Dr. B. Jay Jeffries, on breaking up attachments of the iris to the crystalline lens or posterior synechie.

*Amnesic and Ataxic Aphasia with Agraphia and Temporary Right Hemiplegia, the Result of Embolism of the Left Middle Cerebral Artery.* By T. M. R. Cross, M. D., &c. Louisville, 1872.

An interesting case, reprinted from the "American Practitioner" for April.

*Eighth Annual Report of the Alumni Association of the Philadelphia College of Pharmacy.* Containing, also, the Valedictory Address delivered to the Graduating Class of 1872 by John M. Maisch, Professor of Materia Medica and Botany; and the Prospectus of the Ensuing Course of Lectures in the Philadelphia College of Pharmacy. Philadelphia, 1872. 8vo, 49 pages.

In addition to the contents of this pamphlet, as indicated by the title, it contains the Proceedings of the Association at its eighth annual meeting, together with the usual documents, a report of the Superintendent of the Laboratory, list of members, &c.

#### OBITUARY.

PROFESSOR HUGO VON MOHL, the celebrated botanist, died suddenly of apoplexy April 1st, on the morning of which day he was found dead in his bed. His death is a severe loss to the University of Tübingen, where the deceased has labored since 1835 as professor of botany and director of the botanical garden. Von Mohl was born at Stuttgart, April 8th, 1805, and had therefore nearly completed his 67th year. The investigations of the deceased were mainly in the field of vegetable physiology.

GEORGE ROBERT GRAY, F. R. S.—We regret to have to record the death, on Monday, May 6th, of George Robert Gray, F. R. S., Assistant Keeper of the Department of Natural History at the British Museum. Mr. Gray was the youngest son of Samuel Frederick Gray, author of the well known "Supplement to the Pharmacopœia." The deceased gentleman was himself the author of some highly esteemed works on various branches of natural history.